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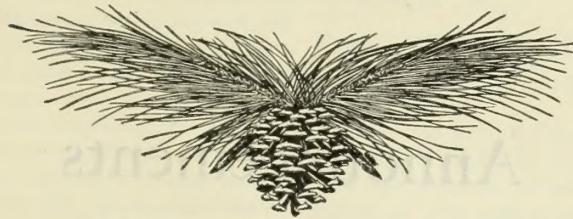
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U. S. Department of Agriculture

FOREST WORKER



November, 1928

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Announcements

Meeting of Society of American Foresters

The annual meeting of the Society of American Foresters will be held in New York City December 28 and 29, in conjunction with the annual meeting of the American Association for the Advancement of Science.

Cash Prizes for Economics Essays

Prizes for studies in the economic field are again offered for 1929 through the generosity of Hart Schaffner & Marx of Chicago, by a committee headed by Prof. J. Laurence Laughlin, University of Chicago. A first prize of \$1,000 and a second prize of \$500 are offered to residents of the United States or Canada without restriction. A first prize of \$300 and a second prize of \$200 are offered to those who, at the time their papers are sent in, are undergraduates of any American college. The topics which the committee suggests, but to which contestants are not restricted, include

"Present and future status of the lumber industry." Preference will be given to essays that do not run beyond 250 or 300 printed pages, and that "excel in the higher qualities of economic insight, grasp of principles, power of analysis, and style." A paper will be disqualified if, before the award is made, it is printed or published in a form that discloses the identity of the author. The contest for the major prizes closes June 1, 1929, and that restricted to undergraduates on July 1, 1929. Particulars can be obtained from Professor Laughlin.

Southern Forestry Congress

The Southern Forestry Congress of 1929 will be held at New Orleans, April 4-6. The officers of the congress are president, B. F. Smith, Industrial Lumber Co., Elizabeth, La.; executive secretary, J. H. Pratt; chairman of executive committee, H. E. Hardtner; secretary, W. R. Hine; and assistant secretary, C. F. Evans.

Because the free edition of this periodical is necessarily limited, it can be distributed without charge outside of the Government service only to such persons and organizations as State forestry and conservation officials, State agricultural extension directors, faculties and libraries of forest schools, and forestry associations. Others desiring to obtain copies of the *FOREST WORKER* can do so by sending 5 cents for a single copy or 25 cents for a year's subscription to the Superintendent of Documents, Government Printing Office, Washington, D. C. Foreign subscriptions: Yearly, 35 cents; single copies, 7 cents.

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FOREST WORKER

Washington, D. C.

NOVEMBER, 1928

Vol. 4, No. 6

State Forestry

First Forestry Fair Held at Waycross, Ga.

The State Forest Fair at Waycross, Ga., September 19-22, was pronounced a distinct success in spite of the tropical storm that visited Georgia just before its opening date. The storm closed most of the roads leading into Waycross, prevented more than one in three of the prospective exhibitors from displaying their goods, and made attendance at the fair impossible for many landowners and naval stores operators by confronting them with the problem of salvaging great quantities of wind-felled timber. Incidentally, the wind tore a 50-foot strip from the roof of the exhibit building and the excessive rainfall prevented most of the field demonstrations that had been planned. Nevertheless the attendance is reported as 3,000 or more, and some 35 manufacturers, organizations, and individuals set up an interesting series of exhibits.

Included among the exhibits were implements for use in naval stores production, forest instruments, fire-fighting and other woods implements, tractors, wood saws, models of steam and American stills, honey of forest origin, naval stores products, and a fire trailer. Other displays dealt with results of experiments in naval stores operations, right and wrong methods of land clearing, the results of pulping southern woods, furniture manufacture, rayon manufacture, the use of a portable sawmill, forest recreation and wild life, the effects of fire on tree growth, forest management methods, and forest types in Georgia.

The five lecture and motion-picture trucks assembled for the southern forestry educational project in which the American Forestry Association is cooperating with the States of Georgia, Florida, and Mississippi were brought to the fair, and their operators gave frequent picture showings by daylight as well as in the evening. The abridged program of field work included a trial of two relatively new machines for making firebreaks. This demonstration brought out the impracticality of the machines for use in the coastal plains region and provided a basis for the evolution of a machine that will be suitable for use in that region. As a substitute for the other field demonstrations planned, Alex Sessions made several hundred people his guests on a trip to inspect the property of the Timber Products Co., at Cogdell, Ga.

At the last of the morning sessions, all of which were given over to talks by foresters, chemists, naval stores

factors and operators, and others, expressions of interest and approval greeted the announcement that the Georgia Forestry Department plans for a repetition of the fair next year.

Forest Protection Goes Before the Grand Jury

The grand jury of Chatham County, Ga., in session in Savannah, listened on the evening of September 24 to a full program of talks on forest protection. In calling an open session for this purpose the foreman of the grand jury complied with a charge from Judge Meldrim, earlier in the term, that special attention be given to measures for protecting the forests and woodlands of the county. Together with practically all members of the grand jury, the meeting was attended by members of the county police force, representatives of the board of trade, attachés of the court, and others. In his opening talk Judge Meldrim expressed his determination to enforce the laws of Georgia forbidding persons other than those domiciled on land to set fire to the land and forbidding the latter to do this except between January 1 and March 1, and making the negligent or careless setting of fire to property a misdemeanor. Herbert L. Kayton, vice president of the Carson Naval Stores Co., Savannah, outlined the history of State forestry work in Georgia and discussed the present popular attitude in the State on the subject of forest fires. J. G. Peters, late assistant forester of the United States Forest Service, explained the cooperative system of forest fire protection provided for by the Clarke-McNary law and gave figures for forest fires in the United States in 1927. B. M. Lufburrow, State forester of Georgia, told of the forestry work being carried on in Georgia on the basis of State, Federal, and private funds amounting this year to \$63,000, and of his dependence for enforcement of the forest fire protection laws on county police and on 296 nonsalaried fire wardens. S. H. Marsh, district inspector of the United States Forest Service, described the educational methods by which forest protection has been made a reality on the Shenandoah National Forest, with the result that this 500,000-acre tract, with 5,000 inhabitants, in 1927 had only 18 acres burned over. In conclusion the grand jury heard a talk illustrated with lantern slides by H. N. Wheeler, lecturer of the United States Forest Service.

FOREST WORKER

Forest Fires in the United States

The damage caused by forest fires on lands under fire protection in the United States and the area burned were both much smaller in 1927 than in the previous year, according to figures compiled by the United States Forest Service. In 1927 the total area of protected land burned was 2,784,000 acres and the damage amounted to \$4,297,000, as against 4,755,000 acres and \$15,048,000 the year before. This improvement receives emphasis from the fact that there was an increase in the number of fires reported from 33,867 in 1926 to 35,300 in 1927.

On lands that were not protected the reports show a big increase in number of fires, damage, and area burned. In 1927, incomplete reports show, there were about 123,000 fires on unprotected areas that burned 35,747,000 acres and caused damage to the amount of \$29,088,000. The previous year about 58,000 fires burned 19,561,000 acres and caused \$11,864,000 worth of damage. The great increase was due in large part to the severe fire season experienced in some of the forest regions of the country. The fact that reports were more complete than those of 1926, however, had some effect in increasing the totals. The contrast between the great increases on the unprotected areas, of which there were 174,000,000 acres, and the decrease in all but number of fires on the protected areas, which totaled 296,000,000 acres, is a striking demonstration of the value of effective fire protection in saving the forest wealth of the Nation.

Fires reported for 1926 spread over 1.21 per cent of the total protected area of the United States; those reported for 1927 covered only 0.61 per cent of the protected area. The Middle Atlantic and Southeastern States made notable progress in reducing the proportion of protected area burned over; this proportion was 2.04 per cent for both regions in 1926, but in 1927 was only 0.41 per cent for the Middle Atlantic States and 1.30 per cent for the Southeastern States. The corresponding figure for the Central States in 1927 was 1.05 per cent, as compared with 1.45 per cent in 1926.

In 1927 the Gulf group of States had the greatest number of fires, 85,341 on the unprotected area and 12,989 on protected lands. The Gulf States also had the greatest area burned over, 18,337,000 acres of unprotected and 1,197,000 acres of protected land, and the greatest loss, \$14,422,000 on unprotected areas and \$998,000 on the protected lands.

Smokers were the leading cause of fires on the protected areas. They were responsible for 6,747 fires that burned over 507,000 acres and caused \$752,000 damage. Incendiaries started 5,379 fires that burned 570,000 acres with a loss of \$659,000. Brush burning caused 4,349 fires, lightning 3,903, railroads 3,732, camp fires 2,645, and lumbering 2,183. Miscellaneous and unknown causes accounted for the remainder of the total. Information as to the causes of fires on the unprotected areas is too incomplete to warrant tabulation.

About 20,000,000 additional acres of land were placed under systematic protection during the year.

State Foresters Indorse Industrial Forestry Extension

Twenty-nine State forestry organizations sent representatives to the meeting of the National Association of State Foresters held at Wooster, Ohio, October 1-4. Including various staff men from the States and representatives of the Federal Government, the active participants numbered 60.

A decision arrived at in this meeting affects the form of the estimates of the prospective cost of fire protection that will be submitted in 1929 by the State foresters of States cooperating in fire protection work under the Clarke-McNary law. Each of these State foresters will define the standard of fire protection that he believes to be practical in his State for the period 1930-1935 in terms of the figure to which he aims to reduce the percentage of forest land burned over in the State each year. This standard will be used by each State forester as the basis for his report as to the sums needed for fire protection in his State. A committee of the National Association of State Foresters is expected to work with representatives of the United States Forest Service in reviewing and reconciling the cost reports submitted by the individual State foresters.

The meeting discussed and unanimously approved the industrial forestry extension amendment to the Clarke-McNary law that has been introduced in Congress. This amendment would permit Federal cooperation with the forestry organizations of the various States in assisting forest industries and timberland owners, through investigation and advice, in the management of forest lands and in the harvesting and utilization of their forest products, with the view of encouraging and promoting reforestation.

Officers elected by the association are president, J. S. Holmes, North Carolina; vice president, Ben E. Bush, Idaho; and secretary, F. W. Besley, Maryland.

Pennsylvania Forest Inspectors Survey Burns

Paid fire crews can make themselves useful between fires by surveying burned-over areas, the Pennsylvania forestry organization suggests. In the Weiser forest district of Pennsylvania an effort has been made to get more accurate fire statistics by having forest inspectors survey all areas of more than 30 acres that were burned over this spring. Ordinarily one compass man was sent out with a helper who worked ahead and provided a foresight. Both men paced the distances. In a few cases fires were surveyed with the use of 100-foot steel tapes instead of pacing. On large fires two, three, or four compass crews were used in order to hasten the work. The field notes were sent into the district office, where the surveys were scaled off on cross-section paper and the squares inside the perimeter of each fire were counted to obtain the acreage. This work can be done more economically by using transparent drawing paper fastened over cross-section paper.

New Trailer for Carrying Fire Crews and Equipment

A new way of carrying water, men, and equipment to forest fires has been devised and successfully tried out by the North Carolina Department of Conservation and Development. It is an automobile trailer having a 300-gallon water tank and over the tank a tool compartment holding 12 small fire pumps, buckets, hose connections, axes, saws, rakes, hooks, backfiring fuses, and emergency food supplies for 20 men. The top of the trailer affords seating space for 10 men. The mud guards are arranged for foot rests, and in the center of the top between the two doors over the tank is a pipe, securely fastened to the tank, that serves as a hand hold. On the tongue of the trailer is mounted a double-action hand pump, which can be operated by a man sitting on top of the tank while a second man plays the hose.

West Virginia to Get Three New Towers

The forest fire protection budget approved in July by the West Virginia Game and Fish Commission for the ensuing fiscal year provides for three new steel observation towers and about 60 miles of telephone line. The largest of the towers will be 73 feet high and will stand at the crest of Stone Coal Mountain in Raleigh County. A 60-foot tower will be erected near Lone Star School, in Wyoming County, and one 47 feet high at Burning Rock, Wyoming County. Each of the towers will have an inside stairway and a glass-enclosed "crow's nest," and at the base a metal house to be used by rangers who stay at the observation point overnight. The construction of the three towers will cost about \$6,000.

A Market for Spruce and Balsam Boughs

The sale of spruce and balsam brush to be used for decorative purposes in cemeteries and as a protective cover for young nursery stock in city parks and on private grounds is reported by E. C. Mandenburg of the Michigan Agricultural Department to have reached large proportions in the upper peninsula of Michigan. The greatest demand is for boughs from $2\frac{1}{2}$ to 3 feet long. The cutting is done in the fall and early winter. The brush is tied in bundles of convenient size by the woods owner or operator and is shipped in car lots of from 12 to 14 tons. The shipper is furnished with a printed contract and receives a price that affords a good profit. As much as 100 tons of the material has been shipped in one season from Palmer, Greenwood, and other upper peninsula points. The boughs are kept in cold storage at convenient points, and hold their foliage until well along in the spring.

This traffic, Mr. Mandenburg observes, not only should appeal to loggers but should interest timberland owners because it creates an opportunity of immediate profit from pruning timber.

California Gives Trees to Haiti

An assortment of California redwoods and of pines and other conifers native to California are to be planted this fall in Haiti, in the gardens of President Borno. At the suggestion of State Forester Pratt, Governor Young of California directed that the trees be taken from the State nursery and sent as a gift to the Haitian president, who is a tree enthusiast.

Quinebaug Park Made Accessible

The Quinebaug Pines State Park in the northeastern corner of Connecticut, about 1 mile south of Putnam, Conn., has been made accessible from the State road by the construction of a foot bridge across the Quinebaug River. The new bridge, formally opened by members of the Connecticut Park and Forest Commission on October 9, is of the suspension type, with piers of reinforced concrete and with rails and planking of creosoted timber.

This park was purchased by the State in 1923 to save from cutting a tract of veteran northern white pine that includes some trees well past the century mark, nearly 3 feet in diameter, and more than 100 feet tall. In addition to the old pines the park contains excellent younger growth. Heretofore no road has given access to the park.

Heavy Crop of Longleaf Seed in Texas

Longleaf pines in eastern Texas are yielding a heavy crop of seed this fall, for the first time in about seven years, and at the same time show a good setting of first-year cones. (It requires two years to mature the cones.) Texas foresters expect that unless adverse weather conditions intervene there will be as good a crop of seed of this species in 1929 as in 1928. Two good seed crops of longleaf pine in consecutive years, the Texas Forest Service reports, is an entirely new experience for this region, where the usual interval between good crops is from 5 to 7 years. In the expectation that myriads of naturally planted longleaf pines will sprout this year and next in the six or eight counties that make up the longleaf pine region of Texas, the State forest service is making a strong appeal to Texans not to endanger by careless use of fire an unusual gift of nature worth millions of dollars.



Of the 600,000 forest tree seedlings raised in the Indiana State forest nursery for this spring's planting 300,000 were assigned to farmers, 200,000 to the stripped-over coal operations, and 20,000 to the State highway department, 75,000 being destined for planting on the State forest, parks, and game preserve. About half the trees were evergreens, the remainder being native hardwoods such as oak, poplar, and walnut.

The woodlot owners' association of Merrimack County, N. H., has a membership of 123. Twenty-three members planted 76,000 white and Norway pine, spruce, and ash this spring, and many others have commenced work to improve their woodlands. At the beginning of the year 1928, 42 woodland owners in the county had taken advantage of the Walker classification law on 1,718 acres.



About 500,000 pine seedlings have been made ready in the nurseries on the Conroe and Kirbyville State Forests of Texas for planting this winter. Some of them will be sold at the cost of production to eastern Texas farmers and lumber companies, to be planted according to instructions of the State forest service; others will be used in demonstration plantings on the State forests. Longleaf pine makes up about 75 per cent of the stock in the two nurseries. Some slash pine has been grown, and more than 20 other kinds of trees have been raised for experimental purposes.



One of the few individuals in New York State who have violated the State's conservation law by refusing to assist in fighting a forest fire when summoned by a fire warden recently paid judgment and costs amounting to \$126.25.

The Arkansas Forest Protective Association was formed at a meeting at Camden, Ark., October 8. The officers of the association are president, A. L. Strauss, Malvern Lumber Co., Malvern; vice president, L. R. Wilcoxon, Crossett Lumber Co., Crossett, and secretary-treasurer, William L. Hall, Hot Springs.



Three and one-half thousand acres of land in New York State was reforested this spring by timberland owners and operators belonging to the Empire State Forest Products Association. One member organization, the St. Regis Paper Co. of Watertown, planted 1,500,000 trees and sold more than 1,000,000 to other concerns. Plantings by the association's members now amount to 18,531 acres.

NOTE.—A. B. Recknagel, forester and secretary of the Empire State Forest Products Association, points out that the item "Farmers Lead in New York Tree Planting," on page 1 of the July FOREST WORKER, failed to make it sufficiently clear that the planting figures given therein covered only the trees raised in the State forest nurseries. Professor Recknagel tells us that in addition to 1,500,000 State-raised trees the members of the Empire State Forest Products Association planted an equal number obtained from commercial nurseries.

Education and Extension

New Forestry Fellowship and Scholarship Fund at Yale

A fund of \$20,000 for fellowships or scholarships has been given to the Yale Forest School by Mrs. William H. Sage, of Albany, N. Y., as a memorial to William Henry Sage, a graduate of Yale College in the class of 1865. Before his death Mr. Sage provided a fund of \$300,000 for the erection of a building for the forest school in memory of his son, DeWitt Linn Sage, Yale, 1897.

Courses Dealing with Forest Products and Farm Woodlots at Virginia Polytechnic

The Virginia Polytechnic Institute, at Blacksburg, Va., has made provision for courses dealing with wood technology, industrial wood fibers, wood-using industries of Virginia, forest products, and farm woodlots. "This college has no intention of establishing a department of forestry to train foresters," writes President Julian A. Burruss. "It is, however, intensely interested in doing two things—namely, assisting the wood-utilizing industries of Virginia and assisting Virginia farmers to dispose of their forest products to advan-

tage." J. W. O'Byrne has for several years been connected with the agricultural extension division of the college as farm forestry specialist. J. Elton Lodewick, recently of the faculty of the New York State College of Forestry, will have charge of the courses in wood utilization. Allen H. Reid, a graduate of the Oregon Agricultural College and of the Massachusetts Agricultural College, will assist in work in connection with farm woodlots.

Denison University Plants Idle Lands

Denison University, at Granville, Ohio, began reforestation work this year on a large tract of land that it received as a gift within the past few years. The portions of this tract that do not adjoin the campus and are not suitable for building sites or athletic fields are to be planted with trees in cooperation with the State forestry department. This spring 15,000 trees were planted in permanent location and 50,000 2-year-old seedlings were lined out in a nursery. Norway, spruce, Norway pine, Scotch pine, and Corsican pine made up this first planting and will predominate in those that follow. Both pure and mixed plantings will be made in order to study their relative value for reforestation purposes in the locality.

The Berkeley Campus as an Arboretum

By WOODBRIDGE METCALF, Extension Forester of California

The campus of the University of California is really a great arboretum containing fine specimens of many native and exotic trees and shrubs. These have now been introduced to the general public through the medium of neatly embossed aluminum labels attached to trunk or branch. Each label gives the tree's common and scientific names, the family of plants to which it belongs, and the country to which it is native.

The trees of the campus are an interesting company. Most people in the neighborhood of the university know that the Leconte Oak is of the coast live oak species and that the Hilgard Chestnut is of a species native to Italy, but many do not realize that the tall, creamy-barked Eucalyptus which graces West Field is a manna gum, that the largest specimen of island ironwood on the California mainland stands north of the university library, or that the little two-leaved pine near the Wheeler Hall steps is of the celebrated French species, maritime pine. The pines are particularly well represented with Monterey, Bishop, Torrey, Coulter, Digger, western yellow, Jeffrey, sugar, limber, and lodgepole of the species native to California and also jack, Norway, and northern white from the Lake States, longleaf and slash from the South, red and black from Japan, Austrian and Scotch from Europe, Canary from the island of that name, and Aleppo from the Mediterranean.

The spruces include Sitka, Colorado, Engelmann, white, Norway, Oriental, and a small grafted specimen of the rare weeping spruce of the Siskiyou Mountains. All three of the true cedars (*Cedrus spp.*) are to be found and several of the junipers, cypresses, and flat-leaved cedars are present. Among the fir trees white, lowland white, European silver, and Nordmann may be seen on the campus, and specimens of balsam fir, California red fir, and noble fir are being grown in the forest nursery. Douglas fir, which is not a true fir, is also represented on the campus.

The campanile until recently was surrounded by 12 weeping Sequoias, a variety of the California Bigtree developed in Belgium. Recently these have been removed and 12 fine specimens of western red cedar now surround the granite shaft. The severely trimmed trees on the plaza are London planes. Two dark green Irish yew trees stand guard at the president's house and two more stand before Bacon Hall. A similar post in front of Agriculture Hall is occupied by two Chinese junipers. Many hardwood trees from east of the Mississippi are to be found here and there on the grounds; a fine yellow poplar stands on the north side of West Field and across the creek are shingle oak, osage-orange, American elm, chestnut, and bigleaf shagbark hickory. Graceful birches, scarlet-leaved red gum, sturdy red oak, prickly honey locust, and fragrant sassafras are found on the grounds and within a few steps of each other may be seen Chinese

elm, Japanese persimmon and zelkova, Norway maple, Australian ironwood and beefwood, and the Brazilian mayten tree.

In the angle between Hilgard and Agriculture Halls there are 60 different species of trees from many parts of the world. These have been grown from seed in the adjacent nursery of the Forestry Division or received from the United States Bureau of Plant Industry. Among them are a beautiful golden-flowered eucalypt from Western Australia, snow gum from Victoria, and a hybrid eucalypt developed in Algeria. Here also are two flowering cherries from Japan, maidenhair tree and two dainty-leaved maples from China, small specimens of Queensland nut and China wood-oil trees, Teneriffe juniper from the Canary Islands, longleaf pine from the Southern States, and persimmon and sugar maple from the East.

More than 250 labels have been made and affixed to the trees on the lower campus. The labeling will be extended to the slopes of Strawberry Canyon, where a large number of trees have been planted in groups. Last year many of the trees in the collection at Chico Forestry Station were labeled, and as soon as possible labels will be placed on the trees at the university farm; at Whitaker's Forest, in Tulare County; at Kearny Ranch, in Fresno; and on the new grounds of the university at Los Angeles. With the cooperation of Prof. H. W. Shepard and Miss K. D. Jones of the landscape division the shrubs also are being labeled on the various properties of the university throughout California.

The \$10,000,000 building program now under way at the university necessitates the removal of many fine old trees; but the forestry, landscape, and botany departments are making every effort to replace these with others of the same species, so that the scientific interest of the campus may be preserved.

Cash Scholarships Awarded for High-School Forestry Essays

Cash scholarships of \$150 and \$100 went to the four boys and girls who won essay contests arranged this spring by the American Forest Week Committee of Oregon for students in high schools and in private schools of high-school grade. First and second prizes of these amounts were offered to the children of Portland and a duplicate set of prizes to children in the remainder of the State. First-prize winners also received silver trophy cups. Certificates of merit signed by the governor were issued to the runners-up. "Oregon and her future forests" was the subject of the essays, which were limited in length to 1,500 words and were given preliminary grading by principals of individual schools.



Sixteen camps of the Four-H Clubs of California were visited this summer by Extension Forester Metcalf, who conducted forestry trips and camp-fire programs for nearly 1,000 boys and girls.

The School Forests of the Berry Schools

The Berry Schools for rural boys and girls, at Mount Berry, Ga., measure their school forests not in acres but in thousands of acres. Forest Manager E. I. Terry made a survey during the past summer of 10,840 acres of land owned by the schools, and classifies it as follows: Campus and farm land, 1,896 acres; mountain forest, 2,924 acres; merchantable pine timber, 757 acres; immature pine areas, 2,100 acres; bottom-land hardwoods or scrub-oak thickets, 609 acres; grasslands, 2,554 acres. The mountain forest, Mr. Terry writes, is a mixed type of hardwoods and pine from which all merchantable timber has been removed, and is now in need of an improvement cutting followed by a period of recuperation. On the areas classed as merchantable pine timber—mostly loblolly, with some longleaf—the trees more than 12 inches in diameter at breast height make up a stand of 4,000,000 board feet. The areas of immature pine include 1,500 acres of large polewood, 300 acres of small polewood, and 300 acres of reproduction, and for the most part are expected to become merchantable in the course of the next 10 to 20 years. On open fields, not used for agriculture, that form about one-fourth of the area surveyed, natural restocking with pine is prevented by the heavy growth of grass. Mr. Terry believes that perhaps 10 or 15 per cent of these fields may be successfully reseeded from nearby standing timber if the turf is harrowed in the fall of seed years. The remainder, he states, may best be reforested by planting.

A purchase made since the survey reported in the foregoing adds about 4,000 acres to the Berry Schools domain.

The agricultural instruction in the schools includes a course in farm forestry.

Mississippi Puts on Three Fair Circuits

Exhibits shown at Mississippi fairs this fall by the State forest service, in cooperation with the State extension forester, aimed to familiarize the people of the State with the great variety of materials produced by the local forest-dependent industries. In addition to lumber samples illustrating grades and species, and specimens of naval stores produced by cupping and by distillation, they included samples of stock used in furniture manufacture, cabinet wood, mill work, sash frames, interior trim, charcoal, acetate of lime, wood alcohol, automobile spokes, shuttle blocks, broom handles, agricultural tools, and pulp and paper. Tools of different types used in naval stores production were shown also, and tree stumps illustrating old and new turpentine methods.

Three duplicate exhibits were prepared, each to be shown at several fairs. The men who were given charge of the three sets were W. H. Humble, former assistant extension forester of Louisiana; Charlie R. Ashford, a graduate of the State agricultural college; and D. C. McCartney, a former assistant district forest ranger of Louisiana who is now studying forestry at the Louisiana State University. To make the most

of the educational value of the exhibits it was arranged that Mrs. D. P. Edgerton, State supervisor of forestry education, should visit schools in the towns where the fairs were held and give the children an introduction to the exhibits.

Two Years of Forestry at Ohio State University

The first half of a 4-year course in forestry is now offered by the Ohio State University. The plan is to have students completing the two years' work transfer to other institutions where they can complete a standard 4-year course. The university's division of forestry has its headquarters in the Horticulture and Forestry Building.

Motorized Educational Campaign in North Carolina

Nine reels of forestry and game educational films are touring North Carolina in a truck equipped with generator, projector, and screens, escorted by William L. Nothstein, a graduate of the Pennsylvania State Forest School. The new, specially designed truck, the property of the North Carolina Department of Conservation and Development, was first put into service at the annual meeting of the North Carolina Forestry Association in September of this year. For the remainder of September and for October a program of showings at fairs was arranged. The November and December schedule was for showings in schools of district 1 (which has headquarters in Asheville) and before Boy and Girl Scouts, Four-H Clubs, and other organizations in that district.

Pennsylvania State Nursery Products Exhibited at Fairs

Tree seedlings from the State forest nurseries of Pennsylvania made a stage appearance this fall at five fairs in the Lackawanna forest district, with the result that District Forester H. M. Nicholas received a large number of applications for planting stock. In addition to potted seedlings representing various kinds of stock offered for distribution from the State nurseries the exhibit shown at the fairs by Mr. Nicholas included a display of 50 native woods, specimens of northern white pine and gooseberry leaves affected with the blister rust, and specimens of pine attacked by the white pine weevil.



Harvey Dengler, a Four-H Club boy of Utica, N. Y., won a prize of \$25 this year with an exhibit of leaves, twigs, and fruit of 15 kinds of New York State trees. The prize was offered to members of the Four-H Clubs of the State by the Empire State Forest Products Association, with the understanding that the money would be used to pay the winner's expenses on the 4-day reforesting tour conducted by the New York Conservation Department in cooperation with the State farm bureau organization.

Forest Service Notes

Grazing and Watershed Protection Experiment on the Manti National Forest

On a watershed at the head of Ephraim Canyon, Manti National Forest, Utah, the improvement in vegetative cover brought about by five years' protection from grazing, which had formerly been excessive, resulted in a reduction of 54.6 per cent in run-off during the summer rainy period and a reduction of 56.2 per cent in erosion during that period. The improvement in vegetative cover appeared to have but little effect on run-off from melting snow. At the time when the cover was badly depleted summer rains were responsible for 88 per cent or more of the average annual erosion, although they caused only about 5 per cent of the yearly surface run-off.

This watershed was chosen by the Great Basin Range Experiment Station in 1915 as the field of experiments to determine what is the rôle of herbaceous and shrubby vegetation in the control of erosion and the regulation of stream flow, and what regulation of grazing is necessary to maintain adequate watershed protection. It has an area of 11.24 acres. A main drainage channel traverses it from end to end, and the terrain slopes with this channel from both sides. The mean gradient of the watershed is about 17 per cent. In 1915 it had about 16 per cent of a full vegetative cover.

Each year from 1915 to 1919, inclusive, the area was closely grazed by a band of sheep, usually about the first of August. Since that time it has been allowed to improve. By 1923 its vegetation had increased to 40 per cent of a complete cover. Beginning in 1926, it has been grazed by sheep late in September, because moderate to light late grazing is not detrimental to vegetation, and the trampling of the sheep has a beneficial effect in getting seeds of forage plants into the ground.

A second watershed on the canyon, 8.97 acres in extent, has been studied as a check area. This watershed, designated as area B, has a slope fairly uniform in direction and a mean gradient of about 15 per cent. In 1915, when the vegetative cover on area A (described in the foregoing paragraphs) had a density of 16 per cent, that on area B had a density of 40 per cent. Like area A, area B was closely grazed during the period 1915-1919, inclusive. Since then, while area A has been allowed to improve, area B has been grazed to hold the density of its vegetation stationary at 40 per cent.

During the period 1915-1919, inclusive, when vegetation covered only 16 per cent of area A, but covered 40 per cent of area B, there was 7.14 times as much run-off and 8.76 times as much sediment removed from A as from B. In 1927, when there was approximately 45 per cent of a complete cover on A and still only a 40 per cent cover on B, there was only 2.01 times as

much run-off and 2.52 times as much sediment removed from A as from B.

The figures that have been given for reduction of run-off and erosion due to summer rains on area A are based on a comparison of averages for the years 1915-1919, inclusive, with averages for the years 1923-1925, inclusive. Records taken in the year 1927, after still further improvement in vegetative cover, show that in that year summer run-off was 71.8 per cent less, and erosion due to summer rains 71.2 per cent less, than the average for the period 1915-1919.

In the summer of 1928 rainfall on the experimental areas was not sufficiently heavy to cause run-off.

California District Collects Seed

By E. E. CARTER, United States Forest Service

In anticipation of the establishment of a forest nursery on the Lassen Forest, Calif., in the spring of 1929, forest officers on the Lassen had a busy time this fall collecting cones and extracting seed. Western yellow pine and Jeffrey pine cones were gathered from the tops of trees felled in lumbering operations on the forest. The collecting season was only about three weeks; the cones could not be taken before the seed were ripe, and after the seed were ready the dry fall weather made the opening of the cones and release of the seed only a matter of days. Big motor trucks brought hundreds of sacks of cones to the forest headquarters at Susanville. There canvas sheets were spread on the ground and the cones spread on them. The usual California sunshine did its work. The most tightly sealed cone yielded in a few days, and spread its scales. A little shaking in a screened box brought the seed rattling out.

Those who are accustomed to handling cones or seed of such trees as Norway pine, Douglas fir, or red spruce would feel the bigness of the West reflected in the size of these Lassen products. The cones of the Jeffrey pine especially seem large, and its seed are nearly as large as the pinon nuts of the Italian's street stand. The empty cones make good kindling, but are not much in demand in a town where dry pine box factory waste is readily available.

Now the Lassen, with over 600 pounds of seed, about half western yellow pine and half Jeffrey pine, is ready to sow seedbeds next spring. Next summer should see between a quarter million and a half million trees, perhaps an inch high, starting bravely on the job of repairing the losses from past fires on the lands now in the national forests of northern California. Two seasons of care, and they will be ready to be planted in their permanent places on the fire-opened mountain slopes. Their tender infancy will be past. They must withstand drought, heat, cold, insects, and diseases. But the only thing they will really fear is fire.

FOREST WORKER

Seed Soaked in Sea Water Remain Good

On the Tongass National Forest, in southeastern Alaska, Ranger R. F. Taylor surmises that a large part of the tree seed crop is wasted by being carried out to sea, but observes that the sea "eats up some of its dead." While cruising timber in Thorne Arm last fall Ranger Taylor found proof of an old-timer's story in the form of a long windrow of spruce and hemlock seed deposited at high tide line. The seed seemed to be in good condition, with wings still intact, and gave no indication of having been soaked very long.

Having no opportunity to gather any of this seed, Ranger Taylor experimented by soaking in a pan of sea water, set where it would remain cold but would not freeze, a quantity of seed collected earlier in the year. Lots of 100 of the seed were taken periodically from the water and germinated on a blotter. Results were as follows:

Number of days in sea water and per cent of germination

| | |
|----|-------|
| 2 | 47 |
| 3 | 53.8 |
| 4 | 48 |
| 5 | 27.07 |
| 6 | 28.26 |
| 12 | 16 |

A check test with unsoaked seed gave 44 per cent germination.

After five or six days' soaking a good proportion of the seed sank to the bottom of the pan. Thus it appears probable that many of the seed returned to shore by the waves, already extracted and ready to be collected or whirled back into the woods by the first breeze, have suffered no sea change that makes them incapable of germination.

Forests While You Wait

By THORNTON T. MUNGER, United States Forest Service

Trees on the Siuslaw National Forest, Oreg., that were planted with grub hoes 16 years ago are now being measured with calipers and hypsometers and their contents computed in board feet and cords. The erstwhile "planting project" on the lower slopes of Mount Hebo has become a forest with but a short wait. Bracken fern, salal, and blackberry have given way to serried ranks of Douglas firs some of which are 45 feet high and as much as 8, 10, or even 12 inches in diameter.

On an area planted in the spring of 1912 with 1-1 Douglas firs spaced 6 by 6 feet, a permanent growth plot was established recently to see just what this wood-fiber factory was doing on this favored site. In a fairly well stocked, but not uniformly fully stocked, part of the 8,000-acre plantation 1 acre had 555 living Douglas firs, with a number of volunteer red alder, cascara, and tree willows besides. Of these Douglas firs 332 were 5 inches in diameter or larger, and 30 were 8 inches or larger. Their aggregate volume was 1,356 cubic feet—about the equivalent of 15 stacked cords. This forest, still in its teens, is already producing an average of a cord an acre a year and is really only beginning to go

strong. The better trees are now shooting up a yard a year, their lower branches are dying off, and they are expanding to very usable diameters.

Meanwhile the fire hazard, which has been acute in this "fern patch" since the original forest was killed some 75 years ago, is diminishing, for the bracken fern and other herbage that supplied the tinder are fast being shaded out. (The bracken was by actual measurement 11½ feet tall in spots.)

National Forest Roads and Trails

Of the \$5,441,434 income from the national forests in the fiscal year 1928 more than half a million will be spent on national forest roads and trails, in accordance with the act of Congress that foreordains one-tenth of the national forest receipts to this purpose. The fund is divided among the national forests, grouped according to States, in the same proportion in which they contributed to the receipts. Of the fund derived from last year's receipts \$136,020 goes to the national forests in California, \$68,660 to those in Oregon, \$67,863 to those in Idaho, and \$57,601 to those in Washington.

The total amount of Congressional appropriations, including the "10 per cent fund," available for constructing and maintaining national forest roads and trails during the present fiscal year is \$9,503,359.

Through the expenditure of money appropriated by Congress for road and trail purposes 1,538 miles of roads and 6,462 miles of trails were constructed on the national forests or adjacent land in the year ending June 30, 1928. Including that year's work, there have been completed 14,823 miles of national forest roads and 39,596 miles of national forest trails. These roads and trails have been constructed at a total expense of \$89,597,405, of which \$72,717,912 was contributed by the Federal Government and \$16,879,493 by cooperating agencies.

At the beginning of the fiscal year 1929 the Bureau of Public Roads had constructed a total of 4,113 miles of national forest roads, at an average expense of \$13,297 a mile. The cost of these major forest roads ranged from an average of \$24,613 a mile in California to an average of \$1,203 a mile in South Carolina. The minor national forest roads constructed up to that date (these are built by the Forest Service) totaled 10,710 miles and cost on the average \$1,350 a mile. The cost of these minor roads was greatest in Alaska, where it averaged \$3,796 a mile, and least in Porto Rico, where it averaged \$72 a mile.

Of the forest highway systems that have been approved by the Secretary of Agriculture as corresponding to the needs of the national forests for the 10-year period ending in 1938, 23 per cent is not yet in existence, 39 per cent is now represented by roads of unsatisfactory type, and 38 per cent has been constructed to a satisfactory standard. Of the projected systems of trails 27 per cent is still nonexistent, 8 per cent is classed as unsatisfactory, and 65 per cent has been satisfactorily completed.

Relation of Stump Diameter to D. B. H. in Western Pines

A tip as to how western yellow pine and western white pine trees can be scaled in absentia comes from M. I. Bradner, chief of forest products in the Missoula (Mont.) office of the Forest Service. In the course of a study of woods waste, conducted on national forests of northern Idaho, it developed that in western yellow pine the diameter inside the bark of a stump (the stumps were usually less than 18 inches in height) was practically identical with the tree's diameter at breast height outside the bark. In the case of western white pine it was found that the diameter outside the bark at breast height was less than the diameter inside the bark of the stump, the differences being approximately as follows:

Diameter of stump, inside bark, 10 to 14, 15 to 19, 20 to 25, and 26 to 32 inches.

Reduction for D. B. H., outside bark, -1, -2, -3, and -4 inches.

Stumps having diameters inside bark of more than 32 inches, Mr. Bradner says, must be judged individu-

ally, since in this class there is a wide variation in form due to stump rot and other butt deformities. Here the reduction varies from 0 to 6 inches.

While the figures just given may not hold good over the entire range of western yellow pine and western white pine, they give at least an interesting lead to be followed wherever the volume of trees of these species has to be determined from stumps.

Wood Pulp from Extracted Pine Chips

Wood chips from which rosin has been extracted by distillation may be used in the manufacture of wrapping paper and of the cheaper grades of composition boards, the Forest Products Laboratory has determined by a series of experiments. Pulps from the extracted wood were, however, found to be unfit for the production of strong first-quality papers. Not only was the pulp from the extracted chips found to be inferior in strength qualities to pulps from unextracted wood, but the yields were somewhat lower. The quality and yield of the extracted-wood pulps can be improved by mixing green wood with the extracted wood to be pulped.

General Forest News

Woodgate Rust Leads to Hard Pine Quarantine in New York

Interstate movement of Scotch pine and certain other hard pines from nine counties of northern New York State is prohibited by a quarantine announced by the Secretary of Agriculture, effective November 1, because of a disease known as the Woodgate rust. The origin of this disease is unknown. No disease exhibiting exactly the same characteristics is known to the Department of Agriculture to have been discovered elsewhere in the United States or in any other country of the world. The name Woodgate has been given to the disease because the first case reported was at Woodgate, N. Y. Two sections are known to be heavily infected, one just southwest of the Adirondack Mountains and one in the extreme northeastern corner of the State. The counties from which interstate shipment is forbidden are Clinton, Essex, Franklin, Hamilton, Herkimer, Jefferson, Lewis, Oneida, and St. Lawrence.

The disease causes galls or swellings on the trunks and limbs of the trees attacked. Following this the parts of the tree above the galls die, or else "brooms" are produced that destroy the value of the pine for lumber. The disease attacks the host with extreme virulence. One tree 15 feet high was found by actual count to have more than 18,000 galls. Control is especially difficult because the rust spreads directly from tree to tree, without the intervention of an alternate host.

All hard pines appear to show a certain degree of susceptibility to Woodgate rust infection, but several

important species including Norway pine and pitch pine have not been proved capable of supporting the fungus long enough to harbor and disseminate the disease. These species, therefore, are not covered by the quarantine order, which affects the following pines: Scotch, Canary Island, slash, Japanese red, Corsican, stone, western yellow, Monterey, loblolly, and Jersey (Virginia). None of these species is native to New York State, but several of them have been widely introduced there. The Scotch pine, the species attacked by the Woodgate rust with particular virulence, has proved valuable for reforestation in New York and in the Northeastern States.

Gipsy Moth Quarantine Revised

Fifty towns of Vermont, Massachusetts, and Connecticut heretofore designated by a quarantine notice of the Department of Agriculture as lightly infested with the gipsy moth are added to the area designated as "generally infested" by a revision of the quarantine effective October 1, 1928. The area affected by the change totals 245.66 square miles in Vermont, 359.24 square miles in Massachusetts, and 976.44 square miles in Connecticut.

The revision of the gipsy moth and brown-tail moth quarantine also modifies regulations as to interstate movement of Christmas trees and greens. Under inspection and certification, Christmas trees and greens originating in the lightly infested area may now be shipped from the generally infested area to points outside the territory under regulation.

Wood Preservative Industry Grows

Continued growth of the wood-preserving industry in the United States is shown by reports for the year 1927 sent by all the testing plants to the American Wood Preservers' Association and the Forest Service. Preservative treatment was given to 345,685,804 cubic feet of wood, or 19 per cent more than was so treated in 1926. Crossties alone showed an increase of 34,631,906 cubic feet in quantity subjected to preservative treatment in 1927 and poles an increase of 14,517,518 cubic feet.

In 1927 the wood-preserving industry used a greater quantity of creosote than ever before—219,778,430 gallons. The use of petroleum as a diluent for creosote increased during the year by more than 41 per cent. During the year 22,911,134 gallons of petroleum was used for this purpose, mainly in the treatment of crossties. The consumption of zinc chloride by the treating plants dropped 10 per cent in 1927, totaling 22,162,718 pounds. The 1,389,465 gallons of paving oil used by the plants during the year was only a little more than half the quantity they had used in 1926.

During the year 1927 the consumption of domestic creosote by treating plants in the United States rose by 38,426,855 gallons and that of imported creosote fell by 4,381,605 gallons.

Ten new treating plants were constructed in the United States in 1927, as against two abandoned. The number of plants that were active in 1927 was 187, or 7 more than were reported active in 1926. At the close of 1927 there were 195 treating plants in the country, of which 134 were commercial plants that treat wood for sale or by contract, 33 were plants owned and operated by railroads for the treatment of crossties and other kinds of right-of-way material, and 28 were plants owned and operated by public utility corporations, mining companies, or the Government.

Naval Stores Consumption, Export, and Import

Exports of turpentine from the United States during the fiscal year of the naval stores industry ending March 31, 1928, were greater than in any other season since 1913-14. According to figures supplied by the Bureau of Foreign and Domestic Commerce 16,494,551 gallons were exported in the season of 1927-28, as compared with 12,794,850 gallons in the season of 1926-27 and with 11,361,500 gallons in the season of 1925-26. Exports of rosin in the season of 1927-28 totaled 1,373,411 barrels, as compared with 1,129,614 barrels in the season of 1926-27. Imports in the 1927-28 season included 9,762 gallons more of turpentine and 19,142 barrels less of rosin than in the preceding season, the total imports being 316,348 gallons of turpentine and 3,625 barrels of rosin.

Industrial consumption of turpentine in the United States is reported by the Bureau of Chemistry and Soils to have increased from 5,617,049 gallons in the

calendar year 1926 to 5,838,298 gallons in 1927. Domestic consumption of rosin decreased from 984,085 barrels in 1926 to 906,951 barrels in 1927. Consumption of mineral thinners rose from 52,637,739 gallons in 1926 to 59,168,760 in 1927.

Fire Loss Slips Below Half Billion

The American people seem to have handled fire with somewhat greater care in 1927 than formerly, according to a report of the National Board of Fire Underwriters. For that year property losses in the United States due to fire were estimated by the board at \$478,245,620; for 1926 they had been estimated at \$560,548,624. This is the first reduction the board's estimates of annual fire loss have shown since 1919. Statistics compiled by the New York Journal of Commerce indicate continued improvement this year, with \$9,000,000 less fire loss during the first seven months of 1928 than in the corresponding period of 1927.

Municipal Camps on National Forests of California

Thirteen municipal camps are maintained on the national forests in California by cities of that State in cooperation with the United States Forest Service. The use of the land occupied by the camps is furnished free of rental charge by the Forest Service; the improvements are maintained and the camps operated by the municipalities without profit for the benefit of their citizens. Because the guests take part in the operating activities, a vacation in one of these camps may be had at a cost of about \$1 a day, exclusive of transportation.

Guests are housed in well-ventilated cabins or tent houses furnished with cots and mattresses. As a rule, there is daily mail service. Stores and libraries are maintained, and a trained nurse is on duty at each camp. Pack-train or hiking trips and nature-study hikes are arranged by the camp staff. Nearly all the camps have swimming pools as well as athletic fields. Each day ends with a camp-fire entertainment put on largely by the guests.

Where the demand for admission to the camps is heavy, guests are usually limited to a stay of two weeks. Some camps provide for family parties, some for organizations such as the Boy Scouts and the Camp Fire Girls. Some designate certain periods for family parties and other periods for different organizations. Since the camps are from 25 to 300 miles away from the municipalities that maintain them, special arrangements are made for transportation.

The San Francisco camp is near Hetch Hetchy; the Oakland camps are located near Quincy and Groveland, and those of Berkeley at Echo Lake and Harlan Flat; Sacramento's camp is along the Placerville-Tahoe Road, and Stockton's is at Silver Lake above Jackson. The camps maintained by the southern California cities are all in the mountains of that region, except for the "High Sierra" Los Angeles camp, which is on the Inyo National Forest above Bishop.

Ribes in Relation to Forest Practices

Field studies of Ribes ecology by the office of blister rust control, Bureau of Plant Industry, indicate the feasibility of decreasing Ribes flora in the western white pine type through forest management. Conclusions tentatively drawn from the work include the following:

Ribes constitute a temporary and not a permanent part of the flora of well-stocked western white pine stands. Dense and well-distributed stands of western white pine reproduction established after cutting or fire free themselves from Ribes in from 10 to 40 years, according to the stand density and the number of Ribes present. This may be due to increasing shade on the forest floor, to root competition, or to some other factor not yet recognized.

Ribes appear in the western white pine type following disturbance of the ecological conditions existing in a well-stocked stand, as brought about through the partial or complete removal of the stand by fire or logging, with attendant partial or complete destruction or removal of the duff. A very light fire that destroys only a portion of the litter in such a stand, or any other disturbance of the forest floor conditions without an opening in the canopy, will cause Ribes seed to germinate. The degree of survival of such seedlings is as yet unknown.

Ribes seed apparently are not disseminated over long distances, but may remain viable in the duff or top soil for long periods. When conditions are favorable the stored seed germinate and establish a new population on the area. These facts give added value to the removal of Ribes plants from an area before seeding has taken place.

The complete destruction of the duff as in very hot fires that burn to the mineral soil results in the establishment of fewer Ribes than partial destruction of the duff as in light fires. Generally speaking, a fire hot enough to destroy the possibility of western white pine reproduction for many years also prevents the establishment of the Ribes.

Because of lack of forest cover, certain small areas in a forested region constitute permanent rather than temporary Ribes sites. The most important of these is the stream type, or narrow belt of brush growing along streams. Secondary permanent Ribes sites are spots in the forest where the forest cover is permanently broken owing to such causes as rock outcrops and swampy places.

Weather Forecasts on the Fire Line

While the Jamesburg, Calif., fire of 1928 was burning its way over approximately 14,000 acres of brush and timber on the Santa Barbara National Forest and adjoining land, Forecaster Gray of the San Francisco office of the Weather Bureau made daily forecasts from an emergency station close to the fire. Each evening he gave the forest officers forecasts of wind direction, approximate velocity, and humidity for the following night and day. Forest Supervisor Mendenhall reports that Mr. Gray's accurate forecasts were a great help in backfiring.



A very light crop of Douglas fir cones is reported from western Oregon for the fifth consecutive year.

Foreign Notes

Gazogènes

The August, 1928, number of the Bulletin of the Central Forestry Society of Belgium is given up entirely to a discussion of gazogènes, or apparatus for extracting gas from wood, charcoal, wood briquettes, etc., as a substitute for gasoline in the operation of motors. An article in this number by M. Alfred Théodor contains a clear and interesting account of the work that has been done in developing such apparatus for use in automobiles, and of the problems involved. This use of charcoal and wood waste has been so far developed in France and Belgium that in automobile shows it has become customary to include a section for machines operated by gazogènes. The occasion for the special number of the bulletin devoted to this subject is an exposition covering methods and apparatus for extracting and using gas from forest materials, held in September at Grand Espinette on the road between Brussels and Waterloo. Over this

historic route, according to the plans of a committee headed by the vice president of the national forestry board, the gazogène trucks and automobiles of various makes were to contest for honors and visitors to the fair were to be transported to and from Brussels in gazogène autobusses.

Federal Aid for Swiss Forest Roads

Under a law of 1902 the Federal Government of Switzerland contributes up to 20 per cent of the cost of roads and aerial tramways built for the primary purpose of getting out timber from the forests, both private and publicly owned. (The area of Federal forests is insignificant.) During the 25 years 1903-1927 Federal contributions for this purpose amounted to \$1,375,000, and the total cost of forest roads and tramways constructed totaled \$7,372,000. The forest area of Switzerland is about equal to that of Massachusetts or Maryland.

Good Returns from Timber Management of French Government Forests

A report on the management of French Government forests in the June number of the Bulletin of the Forestry Society of Franche-Comte gives the production and gross income in recent years as follows:

| | Area | Production | Revenue ¹ |
|------|-------------|--------------|----------------------|
| | Hectares | Cubic meters | Francs |
| 1913 | 1, 216, 578 | 2, 798, 600 | 32, 497, 000 |
| 1925 | 1, 429, 882 | 3, 503, 598 | 226, 245, 000 |
| 1926 | 1, 458, 909 | 3, 642, 534 | 254, 897, 000 |

In a normal year the cost of management is figured at about 13 per cent of receipts and the net income per hectare at about 164 francs. The productive portion of the Government forests is about 1,060,000 hectares, the rest being lands recently reforested or in process of reforestation, protection forests, etc. (A hectare is 2.47 acres.)

These financial results are obtained under management plans that provide for sustained yield, the kind and quantity of timber cut on each forest being very strictly regulated.

Returns from forests belonging to departments, communes, and public establishments for certain years are as follows:

| | Area | Production | Revenue ¹ |
|------|-------------|--------------|----------------------|
| | Hectares | Cubic meters | Francs |
| 1912 | 1, 960, 600 | 4, 639, 000 | 38, 484, 000 |
| 1925 | 2, 208, 400 | 5, 746, 961 | 229, 200, 000 |
| 1926 | 2, 208, 500 | 5, 883, 145 | 394, 446, 000 |

¹ In considering the increase in revenue it must be remembered that the exchange value of the French franc has greatly decreased since 1913.

These forests, also, are managed by the Administration of Forests and Waters, but with some restrictions. They can not be managed solely from the point of view of general public interest. The desires of communes, their resources, and the local needs have to be given special consideration. Communal forests in France have less large timber than the Government forests and firewood is a very important part of their output. For these reasons the returns per acre are not nearly so great as from the Government forests.



According to "Maderil," a timber trade journal of Buenos Aires, the present Argentine Minister of Agriculture is taking a more active interest than his predecessors in forestry matters. He has recently sent a party of five advanced students from the University at Buenos Aires to the Chaco, to work under the direction of two Russian forest engineers in making volume and yield tables and studies of the laws of tree form and growth. He has also named a commission of engineers to develop plans for the study and testing of Argentine woods.

Swiss Scientist Writes of American Soils

Dr. G. Wiegner, professor of soil science at the Federal Polytechnic School at Zurich, in an article on a trip through America in 1927, has the following to say about American forest soils:

In all the excursions that we took we found no soils suffering from severe lixiviation (the removal of the fertilizing principles in the upper layers) and none of the podsolized soils that are so prevalent in northern Europe or the mountain regions of Switzerland. In the mountainous regions of the United States, the most that could be found in the way of podsolized soil was a type in which had taken place a slight displacement from top to bottom of aluminum and iron; nowhere was there found a layer of gray sand such as occurs in true podsol soil. Even in the Canadian part of the Rocky Mountains, in Jasper National Park, I found the lixiviation very slight; I had formerly thought it much more severe. Furthermore, the danger of lixiviation and of loss of fertilizing material is much less in America than with us, even in humid regions. I did not find acid humus anywhere in the forest. The Americans exploit their forests without much care. In Europe we have the idea that after clear cutting on a grand scale the soil must suffer greatly. And that is really the case with us; clear cutting in many regions of Europe where the climate is humid results in deterioration of the soil and loss of fertilizing substances. But in this respect, as in others, America has been more favored by nature than Europe. The formation of podsol soil is slight and this loss of fertilizing elements is never so severe as with us.

Canadian Fire Losses Reduced

Forest fire losses in Canada in 1927 are reported by the Minister of the Interior to have been the lowest ever recorded. During the calendar year 3,766 fires were reported. These fires burned over an area of 481,373 acres and caused damage and loss estimated at \$1,396,055. This is about 20 per cent of the loss suffered in 1926. Heavy snowfall in the preceding winter with abundant rainfall and cool weather through the spring practically did away with the usual period of fire danger in the month of May. Frequent showers during the summer contributed to unusually favorable conditions throughout the Dominion except in the northern parts of Alberta and Saskatchewan and the valley of the Mackenzie River, where the summer season was very dry and considerable areas were burned over. Although weather conditions had a large influence in the reduction of fire loss, a great part of the gain is credited to improved organization and to greater care on the part of the public in using fire in the forests.



Technical forestry education in Sweden is 100 years old this year. The centennial celebration planned to be held this fall included exercises at the Royal Forest High School, near Stockholm, and the issuance of a special de luxe number of the Journal of the Swedish Forestry Society.

Shelter Belts Help the Canadian Farmer

Although raspberries do not grow on forest trees, it is by grace of the work of foresters that they are now being raised on many farms of the Canadian prairies. Twenty-five years ago, says the Canadian Department of the Interior, in the Prairie Provinces the majority of farmers made but little attempt to grow many vegetables other than potatoes, only a few planted small fruits such as currants and raspberries, and the growing of apples and plums was practically unheard of. Since 1901 the Dominion forest service has been campaigning for the planting of trees on the prairies, and as a result many thousands of prairie farms are now protected by well-established shelter belts. Last year an inspection of 7,600 farms on which shelter belts had been established showed that 6,800 had good vegetable gardens, 2,700 were growing small fruits, and about 600 were experimenting with apples or plums or both.

On the Dominion Government's nursery station at Indian Head, Saskatchewan, apple and plum trees planted nearly 20 years ago with shelter-belt protection have borne fruit regularly.

Planting Areas Established on Scotch Deer Forests

The deer forests of Scotland included 1,975,209 acres in 1883 and since then have taken in more than 1,454,791 additional acres, according to Dr. J. D. Sutherland of Edinburgh. In a recent address reported by the London Times Doctor Sutherland explained that these deer-stalking lands are not well forested, containing not more than 45,000 acres of inclosed woodland. To find out the prospects for growing timber on these lands the forestry commission ordered an examination of 38 areas totaling 337,155 acres. Only about 20.3 per cent of the areas examined was found to be plantable. Twelve areas totaling 88,215 acres, of which less than one-third is reckoned as plantable, were acquired by the commission for purposes of afforestation.



Forest industries of Ontario now represent an investment of \$225,000,000, the provincial department of forestry reports. They employ nearly 30,000 people and have an annual pay roll of over \$30,000,000.

Personals

James Girvin Peters, assistant forester of the United States Forest Service in charge of public relations, died October 9, 1928, in Camden, Ark. In his 25 years' work in the Forest Service, which he joined immediately after leaving Yale with the second class of graduates from the Yale Forest School, Mr. Peters made a remarkably individual contribution to American forestry. The Federal Government's cooperation with State Governments in forestry work, inaugurated under the Weeks law and later amplified through provisions of the Clarke-McNary law, was under his charge from its beginning. To this work he brought the even judgment, the spirit of fair play, and the tact that were needed to insure its best success. During his lifetime forestry work under the cooperative plan made notable progress. It was to take part in a meeting looking to the adoption of a forestry policy by the one forested State still without a forestry organization that he made the trip to Arkansas which closed with his death.

John W. Keller, since 1920 chief of the bureau of forest extension, Pennsylvania Department of Forests and Waters, has joined the State's highway department. He will have charge of roadside planting and the maintenance of roadside trees, and of the planting of trees, vines, and shrubbery for the protection of steep slopes along highways. Charles R. Meek succeeds Mr. Keller, and Mr. Meek's position as assistant chief of the bureau of forest protection has been given to Horace B. Rowland, a district forester of the Corn-

planter forest district. R. R. Houpt, assistant forester in the Michaux forest district, has been made district forester in the Cornplanter forest district, with headquarters at Warren.

R. W. Graeber, extension forester of North Carolina, has moved his headquarters from Statesville to the North Carolina Agricultural College, Raleigh.

Rutherford H. Westveld, assistant silviculturist of the Pacific Northwest Forest Experiment Station, has accepted a position for the coming year on the forestry staff of the Michigan Agricultural College.

C. A. Gillett, extension forester of North Dakota, has returned to Cornell University for a year of graduate study. During the year 1928-29 he will assist Extension Forester Cope of New York in field work.

Bernard S. Meyer has resigned as associate forest ecologist, Central States Forest Experiment Station, and has resumed teaching in the Department of Botany, Ohio State University.

Charles M. Genaux has resigned as assistant in forestry at the State College of Washington in order to study for the master's degree at the University of Idaho.

A. P. Kelley has resigned as associate forest ecologist at the Allegheny Forest Experiment Station, to engage in investigative work at the Boyce Thompson Institute for Plant Research, Yonkers, N. Y.

H. C. Mitchell, formerly extension forester of Mississippi, has returned to the State as assistant State forester. Mr. Mitchell devoted the past school year to work at the School of Forestry and Conservation, University of Michigan, for which he received the degree of master of science in forestry.

Warren W. Chase, a master of science of the University of Minnesota, and George W. Craddock, a 1927 graduate of the University of California, hold the Baker & Bidwell research assistantships in the forestry division of the latter institution this year. Mr. Chase will conduct a study of redwood bark, and Mr. Craddock will study the succession of vegetation following burns in the foothill chaparral country.

Clinton G. Smith, assistant district forester in charge of lands for the Eastern National Forest District, has been transferred to the supervisorship of the Cherokee National Forest, Tenn.

R. G. Wheaton has resigned as assistant silviculturist at the Northeastern Forest Experiment Station and will engage in private work.

B. W. Allin, an instructor in the Department of Agricultural Economics, University of Wisconsin, has accepted a temporary appointment as taxation economist with the Forest Taxation Inquiry of the United States Forest Service.

Walter H. Meyer, associate silviculturist at the Pacific Northwest Forest Experiment Station, has gone on leave of absence to reenter the Yale Forest School as a candidate for the Ph. D. degree.

Robert Marshall, assistant silviculturist at the Northern Rocky Mountain Forest Experiment Station, has gone on leave of absence to take up graduate study at Johns Hopkins University, principally in the field of plant physiology.

Harold M. Sebring, formerly district forester for the second district of North Carolina, is now district forester for the section of Florida west of Tallahassee. His successor in North Carolina is A. G. Folweiler, a forestry graduate of the Pennsylvania State College.

W. LeRoy Neubrech has been engaged by the Forestry Department of Purdue University to study the marketing of forest products in Indiana. His first project is a survey of the wood-using industries of the State. Mr. Neubrech received the degrees of B. S. and M. F. at the New York State College of Forestry.

C. Svendby, a 1926 graduate of the Iowa State College, has been appointed assistant in the Department of Forestry, State College of Washington, and will be in charge of the forest nursery operated by the school under a Clarke-McNary agreement. The first large-scale shipment from this nursery, which occupies a tract of about 20 acres adjoining the campus, will be made this fall.

Daniel DenUyl has joined the staff of the forestry department of Purdue University. Mr. DenUyl is a graduate of the Michigan State College and of Cornell University, and has had experience in the United States Forest Service and in the Missouri Department of Forestry.

Charles H. England, for the past four years secretary to Governor McLean of North Carolina, has been selected as chief game warden of that State.

Walter A. Peterson of Clarkton, N. C., has been appointed district forester for the third forestry district of North Carolina, with headquarters in Fayetteville. He succeeds Charles H. Flory, now assistant State forester of North Carolina.

H. E. Clepper has been made district forester of the Weiser forest district, Pennsylvania, where he has served two years as assistant district forester.

A. J. Grasovsky, who received the bachelor's and master's degrees in forestry from the University of California and this spring received the Ph. D. degree from Yale University, is to work under the British Colonial Forestry Department in the northern circle of Palestine, known as the Galilee.

L. MacIntosh Ellis, formerly chief of the New Zealand Forest Service, is now affiliated with industrial forestry interests in Australia. His headquarters are in the Union Building, 8-14 Bond Street, Sydney.

Bibliography

A Good Book on Flowers

By DORIS W. HAYES, United States Forest Service

“Flower Families and Ancestors,” by Clements and Clements, is an unusually interesting and readable little book, well illustrated and full of appeal for any lover or student of nature.

The colored flower chart at the beginning of the book forms at once the threshold and the foundation of the text. It is simple and easily comprehended, yet it constitutes a substantial basis for a practical knowledge of flower structure and of the family relationships of flowering plants. It is simpler to use than the regular

keys of the ordinary manual, and its applications are not limited to taxonomy but prove instructive and helpful also in morphology, in pollination studies, and in flower evolution.

The aim of the book—to inspire and foster in its readers the spirit of inquiry leading toward a knowledge of life processes—is well attained, although owing to the style of presentation one is likely to receive an impression of a “conscious evolution” process that can hardly be intended.

(Frederic E. Clements and Edith F. Clements: Flower Families and Ancestors. 156 pp. il. H. W. Wilson Co., New York, 1928.)

Texas Gets Out a Tree Book

The Texas Forest Service has just published an attractive 96-page pamphlet entitled "Forest Trees of Texas." It contains descriptions of 92 of the common trees of the State, with illustrations of the leaf and fruit of each and a short note on the characteristics of the wood of those species which are of commercial importance. An introduction on forestry in Texas by State Forester Siecke is included. The authors are W. R. Mattoon of the United States Forest Service and C. B. Webster, farm forester of the Texas Forest Service and Extension Service. Copies of the pamphlet may be obtained from the Texas Forest Service, College Station, Tex.

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| Deer: | | American farmers' loss through control, Japan and Korea, in Third Pan Pacific Science Congress | |
| injury to forests, in Forest protection conference | Jan., 14 | | Mar., 11 |
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| Delaware: | | in The part of forestry in flood control | Nov., 16 |
| Forest Conservation Commission | Mar., 2 | provision against, Portugal | Nov., 9 |
| legislative developments | May, 1 | study in Barranca Canyon, Calif. | |
| Demonstration forest: | | See also Floods, Run-off. | |
| gift to Cornell | July, 5 | Essay. See Contest | |
| Mississippi school to have | May, 8 | Eucalyptus, Australians plan paper making from | Nov., 17 |
| Mississippi schools acquire plots | Mar., 6; May, 9 | Evans, R. M., article on "Some effects of the Florida hurricane" | Jan., 10 |
| Ohio law authorizes | July, 3 | Everard, L. C., article on: | |
| presented to New York State College | Mar., 6 | "A national program of forest research" | Jan., 20 |
| Demonstration: | | "Third Pan Pacific Science Congress" | Mar., 11 |
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| woodland management, methods of sawing, piling, and grading | Jan., 6 | at farm products show, Pennsylvania | Mar., 4 |
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| Dendrology: | | farm woodland, Cornell farmers' week | May, 8 |
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| of the United States Forest Service | Nov., 12 | forest fire, new station, Maine | May, 5 |
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| Dentists' dams, wood pulp for | Sept., 13 | in fire-line construction by machinery | Mar., 10 |
| Devices, waste-prevention, prize winning | July, 14 | in fire protection through public education | May, 4 |
| Disease: | | in ledgepole pine utilization | Nov., 8 |
| blight-killed chestnut, natural replacement of (review) | July, 21 | in planting Chinese elm on northern Great Plains | Mar., 15 |
| blight-resistant chestnuts sought in Japan | July, 13 | in preventing rot and fungi in stored logs | Sept., 17 |
| blister rust— | | in Ribes eradication | July, 13 |
| control in Vermont | Jan., 16 | in transplanting slash pine | Nov., 9 |
| planting substitutes for white pine because of, in Forest protection conference | | tolerance test of western tree species | May, 12 |
| quarantine against Ribes | Jan., 14 | with railroad fusee as fire-fighting tool | Jan., 13 |
| reported by school children | May, 5 | Experiment stations, forest: | |
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| in Maine | Sept., 12 | erosion study, Barranca Canyon | Nov., 9 |
| in Dying oaks in the Southern Appalachians | Nov., 13 | field station for | Jan., 10 |
| resistant yellow pines for Nebraska | May, 12 | Lake States, study of fertilizing value of litter | Mar., 8 |
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| region, timber growing and logging practice in the (review) | Sept., 21 | Douglas fir bibliography | July, 22 |
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| Economics of forestry, outline for schools | Nov., 20 | programs available | May, 22 |
| Edgerton, Mrs. D. P., author of Forestry handbook for teachers | July, 21 | Rocky Mountain— | |
| Education, forestry: | | in Disease-resistant yellow pines | May, 12 |
| and extension (sections on) | Jan., 3; | in Tolerance test | May, 12 |
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| bureau organized by Georgia | Mar., 5 | data on pine seedling survival | Jan., 10 |
| educators confer at Philadelphia | Jan., 17 | in Chemical weeding | July, 10 |
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| Wisconsin College of Agriculture | May, 8 | fire-control principles codified | Jan., 22 |
| Farms, forest, in England | Mar., 17 | fire poster available | Jan., 22 |
| Federal: | | forest fires in— | |
| court decree in Kaibab deer case | Sept., 8 | Florida (review) | Jan., 22 |
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North Carolina: Citizens subject to summons to fight fire outside township of residence.....

Oregon: Revolving fund to meet emergency claims; slash burning; fire-prevention devices; landowner's responsibility for suppression, etc.....

Texas: Agents and patrolmen exempt from jury service.....

Utah: Creation of fire districts, liability for burning.....

Vermont: Closed fire season authorized.....

Virginia: fire suppression costs paid by counties, public forests—

Hawaii: Additions to forest reserves.....

Maine: Municipal and town forests authorized.....

Maryland: Auxiliary forest reserves authorized.....

Michigan: Homestead lands may be withheld for.....

Minnesota: Auxiliary State forests authorized; State forest set aside, etc.....

Ohio: Acquisition of land authorized.....

Pennsylvania: Appropriates for State forest park.....

Washington: Tax lands for State forests.....

Wisconsin: County forests—

taxation—

California: Constitution amended.....

Indiana: Increased levy for forestry purposes.....

Louisiana: Constitution amended.....

Minnesota: Constitution amended.....

New York: Fisher law of 1926, in Another big planting year.....

Ohio: Assessment section of forest tax law clarified.....

Washington: Constitutional amendment failed.....

Wisconsin: Constitution amended.....

Litter, leaf:

fertilizing value of red and jack pine.....

in The part of forestry in flood control.....

removal of, effect, in Outrage—

Loan fund, student:

engineers', University of Washington.....

forestry, University of Minnesota.....

New York State College of Forestry.....

Lodgepole pine, experiment in utilization.....

Logging practice, timber growing and:

in central hardwood region.....

in Douglas fir region.....

Longhorn, on the trail of the vanishing.....

Longleaf pine. See Pine.

Los Angeles. See California.

Losses, fire. See Damage.

Louisiana:

constitutional amendment, forestry.....

Forest School—

dedicates Bogalusa camp.....

enrollment.....

State nursery.....

Lowdermilk, W. C.: Report on Third Pan Pacific Science

Congress.....

Mar., 11

Lumber:

company utilizes waste.....

companies making study of slash disposal.....

May, 16

haul of, average.....

Mar., 15

manufacture—

degree course in, Oregon.....

waste, utilization of.....

waste-prevention devices—

May, 16

July, 2

July, 1

July, 3

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| in Indiana..... | Nov., 5 | Nov., 8 |
| Willard H. Jennings..... | Nov., 2 | Sept., 9 |
| trees planted in France..... | Nov., 16 | |
| Mensuration: | | |
| form for computing tree measurements..... | Nov., 20 | |
| yield and volume tables for southern pine..... | July, 21 | Jan., 10 |
| Mexico, trees and shrubs of (review)..... | Jan., 20 | July, 11 |
| Michigan: | | |
| law requires slash disposal along highways and rights of way..... | Nov., 2 | July, 11 |
| lumbermen's reforestation conference..... | Nov., 4 | Mar., 6 |
| new policies, more funds, and a new dean at..... | July, 5 | Jan., 9 |
| tax homestead lands for State forests..... | Sept., 3 | |
| timber along highways..... | Mar., 4 | |
| Minnesota: | | |
| city forest of Winona..... | May, 16 | |
| commission studies forestry needs..... | Sept., 3 | Jan., 9 |
| constitutional amendment, forestry..... | Jan., 1 | Mar. 9 |
| course for Boy Scout leaders..... | Sept., 4 | |
| farmers study forestry..... | Sept., 5 | |
| legislative developments..... | May, 1 | |
| loan fund for forestry students..... | Nov., 6 | |
| women's clubs start forest..... | Nov., 15 | |
| Mississippi: | | |
| Arbor Day..... | Jan., 6 | |
| contest, fire-prevention, Simpson Co..... | Nov., 5 | May, 12 |
| exhibits at fairs..... | Nov., 8 | Nov., 12 |
| fire-protection force organized by lumber company..... | Nov., 14 | |
| forestry essays for prizes..... | Mar., 7 | |
| old field returns good profit..... | Nov., 15 | |
| prize poster contest..... | Nov., 6 | Sept., 11 |
| river. <i>See</i> Floods. | | |
| school to have forest..... | May, 8 | |
| schools acquire plots..... | Mar., 6; | Jan., 20 |
| Missouri appropriates for forestry..... | May, 9 | |
| Mistletoe eradication, Los Angeles County..... | July, 3 | |
| Montana: | | |
| legislative developments..... | May, 2 | May, 12 |
| school forest for University of..... | Jan., 6 | Nov., 12 |
| Monterey pine planted, New Zealand..... | May, 17 | |
| Morgan, Ralph L., forestry work..... | May, 4 | |
| Mount Mitchell lookout tower..... | July, 4 | |
| Municipal forests: | | |
| in Massachusetts..... | May, 3 | |
| in New York..... | Jan., 3; Mar., 3 | |
| in Ontario..... | Sept., 17 | |
| in Vermont..... | Sept., 3 | |
| memorial, in New Hampshire..... | Nov., 2 | |
| of Frederick, Md..... | Mar., 16 | |
| of Winona, Minn..... | May, 16 | |
| started by Bellville, Ohio, in Tree planting at extension meetings..... | July, 7 | |
| Munns, E. N.: | | |
| article on— | | |
| " A Belgian book on silviculture"..... | Nov., 19 | |
| "Forests and Sea Power"..... | July, 20 | |
| " The lesson from Savoy"..... | July, 15 | |
| Mycorrhiza: | | |
| Friends or enemies?..... | May, 11 | |
| in International soil congress..... | July, 11 | |
| National arboretum..... | Mar., 8 | |
| National forests: | | |
| Alaskan— | | |
| pulpwood advertised..... | Mar., 8 | |
| sales of pulpwood..... | May, 9 | |
| Angeles, flood control on..... | May, 13 | |
| Bitterroot and Beaverhead, <i>Dendroctonus monticolae</i> on..... | Jan., 15 | |
| Coronado, natural area designated..... | May, 12 | |
| Court decisions affecting— | | |
| fire law application clarified by Supreme Court..... | July, 9 | |
| Kaibab deer case, Federal court decree..... | Sept., 8 | |
| opening lakes to recreation..... | May, 11 | |
| National forests—Continued. | | |
| Experiments in— | | |
| lodgepole pine utilization, Targhee..... | Nov., 8 | |
| tapping Jeffrey pine for heptane, Lassen..... | Sept., 9 | |
| <i>See also</i> Experiment, Experiments, Study, Studies. | | |
| Florida— | | |
| effects of the hurricane..... | Jan., 10 | |
| naval stores operations..... | Jan., 15; | July, 11 |
| turpentine borer..... | | July, 11 |
| grazing fees set..... | | Mar., 9 |
| in California, special fire regulations..... | | July, 10 |
| in Oregon, forest protection meetings..... | | Mar., 6 |
| Kaibab bug epidemic..... | | Jan., 9 |
| Kaniksu— | | |
| reproduction on a burn..... | | Nov., 10 |
| rocklike substance in heart of burning tree..... | | Sept., 15 |
| underground fire..... | | Jan., 9 |
| Land acquisition and exchanges— | | |
| exchanges consummated in 1926..... | | Jan., 9 |
| legislation, Sixty-ninth Congress, second session..... | | Mar. 9 |
| Pennsylvania virgin white pine and hemlock area offered to Government..... | | Nov., 12 |
| purchase authorized by commission..... | | May, 10 |
| Superior boundaries enlarged..... | | May, 10 |
| Waterville area, Government gets option on..... | | Nov., 12 |
| Manti, growth of planted western yellow pine..... | | Jan., 11 |
| Nebraska, pine seed collected for planting on..... | | May, 12 |
| Ocala created..... | | Nov., 12 |
| receipts..... | | July, 10; Sept., 11 |
| roads and trails..... | | Nov., 9 |
| Upton, order creating, rescinded..... | | Sept., 11 |
| National program of forest research (review)..... | | |
| <i>See also</i> McSweeney bill. | | |
| Natural area: | | |
| designated on Coronado National Forest..... | | May, 12 |
| Pennsylvania virgin white pine and hemlock, offered to Government..... | | |
| Natural replacement of blight-killed chestnut by other species (review)..... | | July, 21 |
| Nature study: | | |
| program by William G. Vinal..... | | Mar., 22 |
| school..... | | July, 8 |
| Naval stores: | | |
| French turpentine methods pamphlet..... | | Nov., 21 |
| gum yields on burned and unburned lands..... | | Sept., 14 |
| meetings and field days..... | | Jan., 15 |
| operations— | | |
| on Florida National Forest..... | | Jan., 15; July, 11 |
| on holdings of Timber Products Co., Georgia..... | | July, 12 |
| practice, good, outline..... | | Sept., 22 |
| rosin standards, United States, adopted by French trade..... | | Nov., 16 |
| turpentine borer on Florida National Forest..... | | July, 11 |
| Nebraska: | | |
| essay contest for children..... | | July, 8 |
| forest planting..... | | Sept., 2 |
| forestry extension initiated..... | | Mar., 7 |
| National Forest, disease-resistant yellow pines for planting stock distributed..... | | May, 12 |
| Nevada, legislative developments..... | | July, 8 |
| New Brunswick, low fire score..... | | May, 2 |
| New England: | | |
| plan for forestry teaching at camps..... | | Jan., 5 |
| wood industries..... | | May, 15 |
| New Hampshire: | | |
| boys get prizes for forestry work..... | | Sept., 5 |
| farm woodlot in, The (review) in Recent State forestry publications..... | | Jan., 21 |
| forestry news letter..... | | Sept., 3 |
| legislative developments..... | | May, 2 |
| Merrimack County forestry association..... | | Nov., 2 |
| municipal forest, memorial..... | | July, 7 |
| sawing, scaling, and grading demonstration..... | | Sept., 15 |
| tree planter..... | | May, 4 |
| town forestry work, Richmond..... | | |

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Waterville area, Government gets option
woodlands closed by proclamation

Nov., 12
Sept., 3

Nursery, forest—Continued.

Indiana purchases land for

Jan., 2
Jan., 3

New Jersey:

additions to State forests
growth of old field shortleaf pine
legislative developments
planting campaign
profit on cedar thinnings

Jan., 3
Nov., 5
May, 3
Sept., 5
Jan., 2

Nov., 20
July, 10
Nov., 10
May, 4

New Mexico, legislative developments

New York:

exhibits, reforestation, at fairs
fire—

Sept., 5

Mar., 5
July, 15
May, 4
Jan., 2

hazard, in Forest protection conference

Jan., 14

Jan., 5
Nov., 10

loss

Jan., 2; July, 3

Nov., 8

legislative developments

May, 3

May, 18

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Jan., 3

Nov., 13

northern, association for utilization of natural resources of
planting—

Sept., 2

Mar., 5
July, 15
May, 4
Jan., 2

another big year

July, 3; Nov., 5

May, 19
Nov., 10

big spring orders for stock

Mar., 3

Mar., 14
July, 8

by farm boys

Sept., 15

July, 3
May, 8
Jan., 6

in two counties

July, 7

July, 7
May, 8
Jan., 6

in 1926

Jan., 3

July, 7
May, 8
Jan., 6

species indicator for planters

Mar., 5

July, 8
May, 8
Jan., 6

survival in forest plantations

Nov., 5

July, 8
May, 8
Jan., 6

Ribes—

eradication experiment

July, 13

July, 7
May, 8
Jan., 6

quarantine against

May, 5

July, 8
May, 8
Jan., 6

school forest dedicated, Friendship

July, 8

July, 8
May, 8
Jan., 6

State College of Forestry—

Jan., 5

July, 8
May, 8
Jan., 6

care of shade trees, short course

Mar., 6

July, 8
May, 8
Jan., 6

demonstration forest presented

May, 8

July, 8
May, 8
Jan., 6

dry kiln practice, short course

Nov., 5

July, 8
May, 8
Jan., 6

tour, forestry

New Zealand:

commercial planting

May, 17

July, 7
May, 8
Jan., 6

imports of western red cedar

Mar., 18

July, 7
May, 8
Jan., 6

woods to be tested for paper making

Sept., 18

July, 7
May, 8
Jan., 6

Newsprint:

Canada takes lead in production

Mar., 14

July, 7
May, 8
Jan., 6

Canadian production

Jan., 17

July, 7
May, 8
Jan., 6

cheap, produced from hardwoods

May, 11

July, 7
May, 8
Jan., 6

United States production and consumption, in Canada

Mar., 14

July, 7
May, 8
Jan., 6

takes lead in production of

July, 15

July, 7
May, 8
Jan., 6

North Carolina:

Duplin County appropriates for forest protection

Jan., 2

July, 7
May, 8
Jan., 6

game preserve, in Game in the Southern Appalachians

Nov., 11

July, 7
May, 8
Jan., 6

highway patrolmen to help in fire control

July, 2

July, 7
May, 8
Jan., 6

legislative developments

May, 3

July, 7
May, 8
Jan., 6

lookout tower dedicated

July, 4

July, 7
May, 8
Jan., 6

paper company encourages farm forestry

Nov., 14

July, 7
May, 8
Jan., 6

roadside planting, a

July, 15

July, 7
May, 8
Jan., 6

survey of resources and industries

Sept., 3

July, 7
May, 8
Jan., 6

North Dakota:

forest extension, first year of

July, 6

July, 7
May, 8
Jan., 6

planting campaign, county

Jan., 6

July, 7
May, 8
Jan., 6

shelter-belt planting

July, 6; Sept., 6

July, 7
May, 8
Jan., 6

Norway pine:

seed—

July, 7
May, 8
Jan., 6

collected for Clarke-McNary work, in State foresters

Nov., 3

July, 7
May, 8
Jan., 6

meet

Jan., 6

July, 7
May, 8
Jan., 6

gives revenue

Mar., 8

July, 7
May, 8
Jan., 6

value of leaf litter

Jan., 18

July, 7
May, 8
Jan., 6

Nurseries, forest:

commercial, in Germany

Nov., 17

July, 7
May, 8
Jan., 6

Government—

Nov., 2

July, 7
May, 8
Jan., 6

in Palestine

Jan., 10

July, 7
May, 8
Jan., 6

in Porto Rico

Mar., 0

July, 7
May, 8
Jan., 6

Nursery, forest:

Clarke-McNary—

Mar., 5

July, 7
May, 8
Jan., 6

leased by Idaho

Nov., 6

July, 7
May, 8
Jan., 6

Washington State College

Jan., 10

July, 7
May, 8
Jan., 6

cooperative, in southern California

Mar., 0

July, 7
May, 8
Jan., 6

county, Winnebago County, Ill.

Mar., 0

July, 7
May, 8
Jan., 6

Nursery, forest—Continued.

Indiana purchases land for

Jan., 2

Louisiana State—

Jan., 3

practice—

Jan., 3

bulletin from Pennsylvania

Jan., 2

chemical weeding of longleaf pine seed beds

July, 10

zinc sulphate for weeding seed beds

Nov., 10

private, of Ralph L. Morgan—

May, 4

production—

Jan., 2

Alabama

Mar., 5

Humboldt County Redwood Reforestation Association

July, 15

Los Angeles County

May, 4

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Jan., 3; Nov., 5

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Jan., 2

Savencac, chemical weeding at

Nov., 10

Nuts, varieties sought for propagation, Iowa

Nov., 8

Oak forests dusted with arsenic by airplane

May, 18

Oaks, dying, in Southern Appalachians

Nov., 13

Obituary:

Jan., 13

Sargent, Charles Sprague

May, 19

Sudworth, George Bishop

May, 19

Ocala National Forest created

Nov., 12

Ohio:

Jan., 12

authorizes acquisition of demonstration forests

July, 3

black walnut stumpage price in

Mar., 14

Four-H Club, first, organized

July, 8

planting, tree—

July, 7

at extension meetings

July, 7

contest of women's clubs

May, 8

sawmill meetings

Jan., 6

Oklahoma:

July, 8

forestry appropriation

July, 4

operator, lumber, grows timber

Jan., 12

Old field returns good profit

Nov., 15

Ontario. *See* Canada.

Oregon:

July, 8

degree course in lumber manufacture

Nov., 4

laws aimed at fire control

July, 2

Organization:

Mar., 4

cooperative fire protection, Kentucky

Nov., 4

cooperative protection, South Carolina

Nov., 4

county fire protection, Virginia

May, 16

of Federal Forest Protection Board

Sept., 1

of forest districts, Maryland

May, 4

of Georgia landowners for fire protection

June, 1

of junior forestry movement, Maryland

July, 7

See also Association; Legislation, State forestry.

Pack, Charles Lathrop, Forestry Trust

Mar., 5

endows research professorship in forest soils, Cornell

July, 7

gives—

Mar., 5

demonstration forest to University of Washington

Nov., 7

tract of timberland to New York State College of Forestry

Mar., 7

stry

Mar., 7

Palestine, State forests and forest nurseries in

Mar., 11

Pan Pacific Science Congress, Third

Mar., 11

Paper:

Mar., 11

company encourages farm forestry

Nov., 14

making from Eucalyptus planned by Australians

Nov., 17

mill, first in Prairie Provinces

Nov., 17

New Zealand woods to be tested for

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|---|--------------------|
| children report blister rust | Nov., 7 |
| demonstrations, thinning | Mar., 7 |
| exhibit at farm products show | Mar., 4 |
| extension forestry, 1926 | May, 7 |
| forest fire— | |
| observation towers | Nov., 5 |
| poster contest | July, 5 |
| protection by coal company | Nov., 14 |
| record lowered | May, 6 |
| Forestry Association, Erie branch | Sept., 6 |
| planting— | |
| Arbor Day, by children | Sept., 6; Nov., 8 |
| campaign | Jan., 2; Mar., 4 |
| on State forests | Mar., 5 |
| spark screens of pines | Sept., 13 |
| stock, free distribution of— | |
| in 1927 | July, 4; Nov., 5 |
| stopped | July, 3 |
| railroad, protection planting | Sept., 13 |
| school forest donated | Nov., 7 |
| virgin white pine and hemlock area offered to Government | Nov., 12 |
| Peridermium, <i>in</i> Disease-resistant yellow pines | May, 12 |
| Personals (sections) | Jan., 19; Nov., 18 |
| Pessin, L. J.: Article on "Friends or enemies?" | May, 11 |
| "Philippine mahogany" decision by Federal Trade Commission | Nov., 15 |
| Phillips, George R.: Article on "An Oklahoma operator grows timber" | Jan., 12 |
| Pine: | |
| Association— | |
| Southern, optimistic about timber growing | Jan., 16 |
| Western, laboratory | Jan., 16 |
| Balkan white, foresters urged to test | Nov., 11 |
| beetle. <i>See</i> Insects. | |
| forests, southwestern, slash disposal in | Mar., 10 |
| growth of— | |
| planted, in Hawaii | Jan., 16 |
| shortleaf, old field, New Jersey | Nov., 5 |
| slash | July, 12; Nov., 9 |
| western yellow, planted | Jan., 11 |
| Institute of America, <i>in</i> Naval stores meetings | Jan., 15 |
| Jeffrey, experiments in tapping for heptane | Sept., 8 |
| litter, fertilizing value of— | |
| red and jack | Mar., 8 |
| Scotch, <i>in</i> Soutrage | Mar., 18 |
| lodgepole, experiment in utilization | Nov., 8 |
| longleaf— | |
| old field crop returns good profit | Nov., 15 |
| seed beds, chemical weeding of | July, 10 |
| seed crop | July, 11 |
| seedling survival | Jan., 10 |
| Monterey, planted in New Zealand | May, 17 |
| moths, airplane attack on | July, 17 |
| Norway, seed— | |
| collection, <i>in</i> State foresters meet | Nov., 3 |
| revenue from | Jan., 6 |
| returns from— | |
| <i>in</i> Georgia | July, 12 |
| <i>in</i> southern Arkansas | Jan., 11 |
| old field crop of longleaf | Nov., 15 |
| shortleaf, primer (review) | Nov., 20 |
| slash— | |
| growth of | July, 12; Nov., 9 |
| seed crop | July, 11 |
| seedling survival | Jan., 10 |
| southern— | |
| second growth, stumpage prices | Jan., 15 |
| yield and volume tables | July, 21 |
| spark screens of, for rights of way | Sept., 13 |
| western yellow— | |
| disease resistant | May, 12 |
| survey of beetle losses in | Jan., 11 |

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|---|------------------------------|
| white— | |
| old, Harvard saves | May, 7 |
| virgin area in Pennsylvania offered to Government | Nov., 12 |
| <i>See also</i> Naval stores, Industrial forestry. | |
| Plant Industry, Bureau of, experiment in <i>Ribes</i> eradication | July, 17 |
| Planting, tree: | |
| by children— | |
| Arbor Day (Pennsylvania) | Sept., 6; Nov., 8 |
| Camp Fire Girls | July, 8; Nov., 6 |
| farm | Sept., 5, 15 |
| by sportsmen's clubs, New York | Jan., 3 |
| by women's clubs, Ohio | May, 8 |
| campaign— | |
| Mountrail County, N. Dak. | Jan., 6 |
| New Jersey | Sept., 5 |
| New York | July, 7 |
| Pennsylvania | Jan., 2; Mar., 4 |
| commercial, New Zealand | May, 17 |
| county— | |
| Muskegon County, Mich. | Jan., 3 |
| New York | Mar., 3; July, 3, 7 |
| demonstration— | |
| extension— | |
| in Ohio | May, 8; July, 7 |
| in Pennsylvania in 1926 | May, 7 |
| private, <i>in</i> Big spring orders for New York planting stock | Mar., 3 |
| experimental— | |
| <i>in</i> Porto Rico | Nov., 2 |
| <i>in</i> Virginia | Sept., 2 |
| <i>of</i> Chinese elm on the northern Great Plains | Mar., 15 |
| <i>transplanting</i> slash pine | Nov., 9 |
| farm— | |
| <i>in</i> England | Mar., 17 |
| <i>under</i> the Clarke-McNary law | May, 6 |
| <i>in</i> Nebraska | Sept., 2 |
| <i>in</i> New York | Jan., 3; July, 3, 7; Nov., 5 |
| <i>in</i> Porto Rico | Nov., 2 |
| memorial— | |
| Armistice Day, France | Nov., 16 |
| New York | Jan., 3 |
| municipal— | |
| New York | Jan., 3; Mar., 3 |
| Ontario | Sept., 17 |
| <i>on</i> State forests— | |
| Pennsylvania | Mar., 5 |
| Texas | May, 5 |
| protection— | |
| <i>shelter belt</i> , by North Dakota farmers | July, 6; Sept., 6 |
| <i>spark screens</i> on rights of way | Sept., 13 |
| <i>windbreak</i> , Porto Rico | Nov., 2 |
| <i>roadside</i> , North Carolina | July, 15 |
| <i>species indicator</i> for planters | Mar., 5 |
| <i>stock</i> — | |
| <i>distribution</i> — | |
| <i>in</i> Kentucky | Nov., 5 |
| <i>in</i> New York | Mar., 3; Nov., 5 |
| <i>in</i> Ontario | Sept., 17 |
| <i>in</i> Palestine | Nov., 17 |
| <i>in</i> Pennsylvania— | |
| <i>free, discontinued</i> | July, 3 |
| <i>in 1927</i> | July, 4; Nov., 5 |
| <i>in</i> Porto Rico | Nov., 2 |
| <i>to farmers</i> — | |
| Alabama | Mar., 5 |
| Nebraska | July, 8 |
| <i>under</i> the Clarke-McNary Act | Sept., 2 |
| <i>production</i> . <i>See</i> Nurseries. | |
| <i>Plow</i> used in fire-line construction | Mar., 10; July, 9 |
| <i>Poland</i> , exports of sawn softwoods to England | Sept., 17 |
| <i>Poplars</i> , breeding, for pulp | July, 14 |
| <i>Porcupine</i> control | Nov., 15 |
| <i>Porto Rico</i> planting work | Nov., 2 |
| <i>Portugal</i> , forestry laws | Nov., 16 |

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| Poskin, A., author of Manual of Silviculture | Nov., 19 | Reforestation—Continued. | |
| Poster contest, forestry | July, 5; Nov., 6 | conference of Wisconsin and Michigan lumbermen | Nov., 14 |
| Poster, fire, available | Jan., 22 | constitutional amendment encouraging, adopted by— | |
| Posts, fence, lodgepole pine used for | Nov., 8 | California, Minnesota, and Louisiana | Jan., 1 |
| Pratt, George D., address, in American Forestry Association meeting | Mar., 12 | Wisconsin | July, 2 |
| Preservation, wood: | | part of, in flood control | May, 12; Sept., 6 |
| in 1926 | July, 15 | plan— | |
| increase in treatment of ties | Jan., 16 | of Association for Utilization of the Natural Resources | |
| treated ties in trolley tracks | Jan., 14 | of Northern New York | Sept., 2 |
| Preventing termite damage | Sept., 12 | of the British Government | Mar., 17 |
| Prizes: | | proposed by Cape Cod committee | Nov., 4 |
| offered to rangers | May, 18 | provided for by Oklahoma lumber operator | Jan., 12 |
| See Contest. | | resolution— | |
| Products, forest: | | favoring, adopted by East Texas Chamber of Commerce | |
| railroad purchases of | Sept., 14 | to cooperate in, adopted by National Council of Boy Scouts | July, 4 |
| See Laboratory, Lumber, Naval stores, Paper, Preservation, Pulp, Utilization. | | Spain appropriates for tax, levied by San Diego County, Calif. | July, 8 |
| Profit: | | wins new friends in southern pine field, in Southern Pine Association optimistic | July, 17 |
| in fire protection | Nov., 14 | See also Planting. | Sept., 2 |
| old field returns good | Nov., 15 | Regional accessibility and stumpage | Jan., 15 |
| on cedar thinnings, New Jersey | Jan., 2 | Reineke, Lester H., devises form for tree measurements | Nov., 20 |
| Profits, present lumbering, increased by providing for second cut | Sept., 12 | Report: | |
| See also Pine, returns. | | Delaware Forest Conservation Commission | Mar., 2 |
| Program of forest research, National (review) | Jan., 21 | Federal Power Commission | Jan., 20 |
| Providing for second cut increases present profits | Sept., 12 | Texas legislative committee on forestry | Jan., 1; Mar., 2 |
| Public Roads, Bureau of, study of run-off | July, 11 | See also Reviews. | |
| Publications. See Bibliography. | | Research: | |
| Publicity, forestry, of western business concerns | Sept., 4 | club in plant sciences, Yale | May, 9 |
| Pulp: | | forest— | |
| American woods, suitability for | July, 21 | bill, McSweeney— | |
| and Paper Association, Canadian, investigative work | Mar., 18 | introduced | Mar., 14 |
| and paper division, Canadian Forest Products Laboratories | July, 18 | receives endorsements | May, 13; Sept., 14 |
| breeding poplars for | July, 14 | fire weather forecasting, Canada | July, 18 |
| exports, Canadian | Jan., 17 | in Czechoslovakia | Mar., 17 |
| wood, for dentists' dams | Sept., 13 | in Japan | Jan., 17 |
| See also Paper. | | national program of, A (review) | Jan., 20 |
| Pulpwood, Alaska, sales of | Mar., 9; May, 9 | taxation, Federal funds for, in Clarke-McNary allotments | July, 1 |
| Pump, double-action back-pack, tested on slash fires | Nov., 11 | professorship in forest soils, Cornell | Mar., 5 |
| Quarantine: | | range. See Range research. | |
| against Ribes | May, 5 | See also Experiment, Experiments, Experiment stations, Laboratory, Study, Studies. | |
| gipsy moth and browntail moth | July, 15 | Reserves, new forest, in Hawaii | Sept., 2 |
| Quebec. See Canada. | | Resins: | |
| Rachford, C. E., appraisal of national forest ranges by, in The famous Casement report | Jan., 6 | gum yields on burned and unburned lands | Sept., 14 |
| Radio: | | heptane, experiments in tapping Jeffrey pine for | Sept., 9 |
| equipment, used in air patrol | May, 18 | See also Naval stores. | |
| fire warning, France | Sept., 18 | Reviews. See Bibliography. | |
| talks on forestry | Nov., 11 | Reynolds, Robert V.: Article on "The increasing average haul of lumber" | Mar., 15 |
| Railroad: | | Ribes. See Disease. | |
| fusee a possible fire-fighting tool | Jan., 13 | Richmond, N. H., unusual town forestry work of | May, 4 |
| growing timber | Sept., 15 | Roads, national forest | Nov., 9 |
| protection plantings | Sept., 13 | Rosin. See Naval stores. | |
| Railroads, forest products purchased by | Sept., 14 | Rot, Swedish experiment in preventing | Sept., 17 |
| Range: | | Rowland, H. B.: Article on "The railroad fusee—a possible fire-fighting tool" | Jan., 13 |
| appraisal, national forest, Casement report on | Jan., 6 | Run-off: | |
| management. See Grazing. | | forest cover and, figures on | July, 11; Sept., 16 |
| research, indorsed by stockmen | Sept., 13 | influence of snow on | Nov., 16 |
| reserve, Santa Rita, calf crop on | Mar., 11 | See also Floods. | |
| Receipts, forest, Government: | | Sahara, is it drying up? | Sept., 16 |
| France | Sept., 17 | Santa Rita Range Reserve, calf crop on | Mar., 11 |
| Quebec | July, 18 | Sargent, Charles Sprague, obituary | May, 19 |
| United States | Sept., 11 | Savanna Forest Nursery, chemical weeding at | Nov., 10 |
| Recreation: Court decision opens irrigation lakes to | May, 11 | Savoy, the lesson from | July, 15 |
| Redwood: | | Sawing, scaling, and grading demonstration at Rochester, N. H. | July, 7 |
| blocks for flooring | Sept., 15 | Sawmill: | |
| growth of | July, 15; Sept., 13 | meetings in Ohio | Jan., 6 |
| nursery stock produced by Humboldt Redwood Reforestation Association | July, 15 | portable, short course in use of, Wisconsin | May, 8 |
| planting | July, 8 | Scaling [sawing, —, and grading] demonstration at Rochester, N. H. | July, 7 |
| Reforestation: | | | |
| advocated for Africa | Sept., 16 | | |
| clubs, boys', Louisiana | Nov., 8 | | |

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| School: | Silviculture: | | |
| county leader, farmers study forestry at forest— | Sept., 5 | Belgian book on, A (review) | Nov., 19 |
| Australian, established in Japan | Mar., 17; Nov., 17 | breeding poplars for pulp | July, 14 |
| Zurich, new school forest | Jan., 17 | cedar thinnings in New Jersey | Jan., 2 |
| See also College, University. | Sept., 18 | in Porto Rico | Nov., 2 |
| nature study in State park | July, 8 | of lodgepole pine | Nov., 8 |
| Schools, public: | | Oklahoma operator grows timber | Jan., 12 |
| Arbor Day plantings planned | Sept., 6 | recommendations to farmers, <i>in</i> County forestry in Arkansas | Jan., 5 |
| blister rust reports by children | Nov., 7 | slash disposal in southwestern pine forests | Mar., 10 |
| California, forestry courses authorized in contest, forestry— | Sept., 2 | timber growing and logging practice— | |
| essay— | | central hardwood region | Sept., 21 |
| adapted for American Forest Week | Jan., 3 | Douglas fir region | Sept., 21 |
| held by Georgia Forestry Association | Sept., 5 | Virginia mill practices selective cutting | July, 14 |
| held by Vermont association | July, 7 | yellow poplar responds to cuttings | July, 10 |
| in Humboldt County, Calif. | July, 7 | Silviculturist, examination for | Mar., 11; July, 10 |
| in Mississippi | Mar., 7 | Slash: | |
| poster, in Pennsylvania | July, 5 | burning, closed season established by Oregon | July, 2 |
| Forestry handbook for teachers (review) | July, 21 | disposal— | |
| Ida Grove, Iowa, forest study in land given for school forest— | Nov., 7 | in southwestern pine forests | Mar., 10 |
| in Friendship, N. Y. | July, 8 | lumber companies making study of | Sept., 15 |
| in Sayre, Pa. | Nov., 7 | Michigan law requires, along highways and rights of way | Nov., 2 |
| Mississippi, demonstration forests for | Mar., 6; May, 9 | pine. <i>See</i> Pine. | |
| Oregon, forestry economics outline for | Nov., 20 | Smith, Herbert A.: Article on "Southern Forestry Congress meeting" | May, 14 |
| Pennsylvania, encouraged to plant trees | Jan., 2 | Smith, H. A.: Article on "A township forest fire poster contest in Pennsylvania" | July, 5 |
| South Carolina to put forestry in the | July, 8 | Smoker's code | Nov., 12 |
| Science Congress, Third Pan Pacific | Mar., 11 | Snow: | |
| Sea power, forests and (review) | July, 20 | forests, —, and floods in Belgium | Nov., 16 |
| Seed: | | influence of, on run-off | Nov., 16 |
| collection— | | Snyder, Thomas E.: Article on "Preventing termite damage to buildings" | Sept., 12 |
| by Los Angeles County forestry department | May, 4 | Society for Protection of New Hampshire Forests: | |
| Norway pine— | | conference on forestry teaching in children's camps | Jan., 5 |
| for Clarke-McNary work, <i>in</i> State foresters meet | Nov., 3 | forestry missionary to summer camps | May, 7 |
| gives revenue | Jan., 6 | Four-H Club work | Sept., 5 |
| disease-resistant, for planting in Nebraska | May, 12 | Society of American Foresters, Allegheny section, meeting | Sept., 14 |
| trees, left by lumber operators | Jan., 12; July, 14 | Soils: | |
| Seeding period of Douglas fir | Sept., 9 | fertilizing value of leaf litter— | |
| Seeding, direct, in Porto Rico | Nov., 2 | red and jack pine | Mar., 8 |
| Seeding survival, longleaf and slash pine | Jan., 10 | Scotch pine and beech, <i>in</i> Soutrage | Mar., 18 |
| Selective logging: | | international soil congress | July, 11 |
| increases present profits | Sept., 12 | research professorship endowed at Cornell | Mar., 5 |
| Oklahoma operator grows timber | Jan., 12 | South Carolina: | |
| to be practiced by Lake States companies | Nov., 14 | cooperative projects | Nov., 4 |
| Virginia mill practices | July, 14 | forestry bill passes Senate | Mar., 3 |
| Sessions, Alex K.: | | Forests and forestry in (review), <i>in</i> Recent State forestry publications | Jan., 21 |
| describes fire-line system | Nov., 1 | growth of planted slash pine | Nov., 9 |
| <i>in</i> No fires—fast growing pines | July, 12 | legislative developments | May, 1 |
| Shelter belt planting, North Dakota | July, 6; Sept., 6 | to put forestry in schools | July, 8 |
| Shepard, Ward: Article on "Woods work now required for Boy Scout merit badge in forestry" | Mar., 6 | Southern Forestry Congress, Ninth: | |
| Sherman, E. A.: | | meeting | May, 14 |
| address, <i>in</i> American Forestry Association meeting | Mar., 12 | proceedings | Sept., 22 |
| article on "Flood-control plan must include forestation" | May, 12 | Southern pine association optimistic about timber growing | Jan., 16 |
| Shirasawa, Doctor, information from, on forestry in Japan | Jan., 17 | Southern States, forest fires in, 1925 | May, 15 |
| Short course: | | Soutrage | Mar., 18 |
| care of shade trees | Jan., 5 | Spain wakes up | July, 17 |
| dry kiln practice | May, 8 | Sparhawk, W. N., articles on: | |
| timberland management | Nov., 6 | "Cooperative forestry in Finland" | July, 16 |
| use of portable sawmill | May, 8 | "Forest farms in England" | Mar., 17 |
| Short lengths to be purchased by Army | Nov., 14 | "Soutrage" | Mar., 18 |
| Shortleaf. <i>See</i> Pine. | | "Spain wakes up" | July, 17 |
| Silvics: | | Spark screens of pines for rights of way | Sept., 13 |
| disease-resistant yellow pine | May, 12 | Spaulding, Perley, urges tests of Balkan white pine | Nov., 11 |
| fertilizing value of leaf litter— | | Species indicator for planters | Mar., 5 |
| red and jack pine | Mar., 8 | Sportsmen's clubs (New York) plant trees | Jan., 3 |
| Scotch pine and beech, <i>in</i> Soutrage | Mar., 18 | Spruce, blue, recorded range extended | Jan., 11 |
| progress of height growth of trees | Mar., 20 | State forest: | |
| reproduction on Kaniksu burn | Nov., 11 | another in Vermont | Jan., 2 |
| seedling survival, longleaf and slash pine | Jan., 10 | first | |
| studies of the humus layers | Jan., 22 | <i>of</i> Georgia | May, 6 |
| tolerance test of western species | May, 12 | <i>of</i> Illinois | Nov., 2 |

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| State forest—Continued. | | | |
| gift to Connecticut for purchase | Mar., 5 | Ten commandments of the trail | Mar., 16 |
| given to Connecticut by American Legion | Nov., 3 | Tennessee, legislative developments | May, 3 |
| park, appropriation for— | | Termite: | |
| by Pennsylvania | Sept., 2 | building conference adopts code to prevent damage | Nov., 15 |
| by Texas | Sept., 3 | preventing damage | Sept., 12 |
| placed under administration, Texas | May, 5 | Tests. <i>See</i> Experiment, Experiments. | |
| profit on cedar thinnings, New Jersey | Jan., 2 | Texas: | |
| reserves, Hawaii | Sept., 2 | agents and patrolmen of forest service exempt from jury service | |
| State forests: | | appropriations for forestry work | Nov., 5 |
| additions to— | | East Texas business men endorse forestry | Sept., 3 |
| in New Jersey | Jan., 3 | legislative committee on forestry, report | July, 4 |
| in Vermont | Nov., 4 | lumber company employees serving as fire wardens | Jan., 1; Mar., 2 |
| and forest nurseries, Palestine | Nov., 17 | planting on State forest | May, 6 |
| and game refuges, Indiana | Jan., 2 | State forest placed under administration | May, 5 |
| auxiliary, acceptance of use authorized by Maryland | July, 3 | | May, 5 |
| demonstration, establishment authorized by Ohio | July, 3 | Thinning: | |
| homestead lands for, Michigan | Sept., 3 | by Four-H boys, New Hampshire | Sept., 5 |
| tax lands for, Washington | Sept., 3 | cedar, profitable, New Jersey | Jan., 2 |
| State foresters meet | Nov., 3 | demonstration | Mar., 7 |
| State forestry: | | lodgepole pine | Nov., 8 |
| sections on— | Jan., 1; Mar., 2; May, 1; July, 1; Sept., 1; Nov., 1 | of farm forests, <i>in</i> County forestry in Arkansas | Jan., 5 |
| <i>See</i> Clarke-McNary; Legislation; Planting; State forests, names of individual States. | | yellow poplar responds to | July, 10 |
| Stockmen endorse range research | Sept., 11 | Tillotson, C. R.: | |
| Storage of logs and pulpwood, experiment in | Sept., 17 | article on "A new bulletin from Pennsylvania" | Nov., 20 |
| Stratton-Porter, Gene, memorial forest | Jan., 3 | author of Forest fires in Maine | Mar., 21 |
| Study: | | Timber: | |
| investigation into progress of height growth of trees | Mar., 21 | along Michigan highways | Mar., 4 |
| of fertilizing value of leaf litter— | | growing | |
| red and jack pine | Mar., 8 | and logging practice | |
| Scotch pine and beech | Mar., 18 | central hardwood region (review) | Sept., 21 |
| of forest cover and run-off | July, 11 | Douglas fir region (review) | Sept., 21 |
| of influence of snow on run-off | Sept., 16 | by Oklahoma operator | Jan., 12 |
| of redwood growth | Nov., 16 | providing for second cut increases present profits | Sept., 12 |
| of reproduction on a burn | Sept., 13 | Southern Pine Association optimistic about | Jan., 16 |
| of seed dissemination of Douglas fir | Nov., 11 | Products Co., slash pine timber on holdings at Cogdell, Ga., <i>in</i> No fires—fast growing pines | July, 12 |
| of slash disposal in southwestern forests | Sept., 9 | requirements, ideas of 40 years ago | Jan., 12 |
| of wood utilization | Mar., 10 | western yellow pine in Oregon, survey of beetle losses in | Jan., 11 |
| Studies: | | Timberland management. <i>See</i> Management. | |
| of erosion | May, 13; Nov., 9 | Tolerance test of western species | May, 12 |
| <i>in</i> Third pan Pacific science congress | Mar., 11 | Torch, use of in backfiring, <i>in</i> The railroad fusee | Jan., 13 |
| of forest cover and run-off, <i>in</i> The part of forestry in flood control | Sept., 6 | Tour, forestry: | |
| <i>of the humus layers of coniferous forests</i> | Jan., 22 | farm bureau, California | Nov., 6 |
| <i>See also</i> Experiment, Experiments. | Jan., 15 | New York | Nov., 5 |
| Stumpage prices and regional accessibility | | Town forestry. <i>See</i> County forestry. | |
| Subsidies, Government forestry: | | Tractor used in fire-line construction | Mar., 10 |
| French, for fire prevention | Jan., 18 | Trail builders, farm implements as | July, 9 |
| Japanese, <i>in</i> Forestry in Japan | Jan., 17 | Trails, national forest | Nov., 9 |
| Spanish, <i>in</i> Spain wakes up | July, 17 | Treatment, preservative. <i>See</i> Preservation, wood. | |
| Sudworth, George B.: | | Tree: | |
| article on— | | Day celebrated, France | Nov., 16 |
| "The national arboretum" | Mar., 8 | cork, remarkable | Jan., 18 |
| "Trees and shrubs of Mexico" | Jan., 20 | planting. <i>See</i> Planting. | |
| library and herbarium | Sept. 4 | Trees: | |
| obituary | May, 19 | and shrubs of Mexico (review) | Jan., 20 |
| Suitability of American woods for paper pulp (review) | July, 21 | Christmas— | |
| Summer camp. <i>See</i> Camp. | | shipped from Maine | May, 6 |
| Superior National Forest boundaries enlarged | May, 10 | Vermont farmers get low prices for | May, 5 |
| Supreme court decision clarifies application of fire law | July, 9 | forest, of the United States, check list of (review) | May, 21 |
| Survival of longleaf and slash pine seedlings | Jan., 10 | investigation into progress of height growth of | Mar., 20 |
| Suwancee Forest, Ga., fire-line system on | Nov., 1 | shade, course on care of | Jan., 5 |
| Swamp, Zapata, Cuba, timber in | Jan., 17 | Tropical forest in the Zapata Swamp, Cuba | Jan., 17 |
| Sweden: | | Tropical woods, bibliography of (review) | Mar., 21 |
| experiment in preventing rot and fungi in stored logs | Sept., 17 | Tryon, Henry H., author of Forests and forestry in South Carolina, <i>in</i> Recent State forestry publications | Jan., 21 |
| forest association receives gift | May, 18 | Turpentine. <i>See</i> Naval stores. | |
| Switzerland: | | Underground fires | |
| investigation into progress of height growth of trees | Mar., 21 | University: | |
| new figures on forests and run-off | Sept., 16 | California— | |
| school forest for Zurich forest school | Sept., 18 | enrollment, forestry | May, 8 |
| study of influence of snow on run-off | Nov., 16 | observations on redwood growth | Sept., 13 |
| Taxation, forest: | | occupations of forestry graduates | Mar., 7 |
| legislation. <i>See</i> Legislation. | | | |
| study. Federal funds for, <i>in</i> Clarke-McNary allotments | July, 1 | | |

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University—Continued.

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| Cornell— | | Walnut: | |
| exhibit, farm woodland | May, 8 | growth of | Nov., 15 |
| gift of land for forest | July, 5 | stumpage price, Ohio | Mar., 14 |
| research professorship in forest soils endowed | Mar., 5 | Washington: | |
| Harvard— | Nov., 3 | State College enlarges nursery | Nov., 6 |
| Forest, <i>in</i> State foresters meet at Hartford | May, 17 | university demonstration forest | Nov., 7 |
| saves old white pines | Mar., 5 | Waste: | |
| Idaho leases arboretum site | Sept., 4 | lumber mill, utilization of | May, 16 |
| Louisiana— | Nov., 8 | prevention devices contest | Jan., 11; July, 14 |
| dedicates Bogalusa camp | Jan., 6 | Water Power Commission, Federal, report | Jan., 21 |
| enrollment | July, 5 | Waterville area, New Hampshire, Government gets option on | Nov., 12 |
| Maine, camp in north woods | Sept., 4 | Weather, forest fire: | |
| Michigan— | Nov., 8 | experiments in Maine | May, 5 |
| forest school | Jan., 6 | forecasting research service, Canada | July, 18 |
| library and herbarium of George B. Sudworth given to | July, 5 | humidity, relative, <i>in</i> Forest protection conference at | |
| Minnesota— | Sept., 4 | Syracuse | Jan., 14 |
| course for Boy Scout leaders | Sept., 4 | Weeding, seed bed: | |
| loan fund for students | Nov., 6 | chemical | July, 10 |
| revenue from sale of Norway pine seed | Jan., 6 | zinc sulphate for | Nov., 10 |
| Montana, school forest | Jan., 6 | Weevil, white pine, control of, <i>in</i> Forest protection conference | Jan., 14 |
| Toronto— | Mar., 18 | West Virginia, Clarke-McNary agreement | Nov., 1 |
| extension course in forestry | May, 18 | Western: | |
| forestry registration | Sept., 2 | business advertises forest fire prevention | Sept., 4 |
| Virginia, experimental plantings on grounds | Nov., 7 | pine beetle killed by low temperature | May, 16 |
| Washington— | Mar., 6 | red cedar, imports into New Zealand | Mar., 18 |
| demonstration forest | May, 9 | yellow pine timber, beetle damage survey | Jan., 11 |
| forestry enrollment | May, 8 | yellow pines, planted, growth | Jan., 11 |
| loan fund, engineers' | Nov., 6 | Whitaker's Forest, <i>in</i> Four-H camp in California | May, 7 |
| Wisconsin, short courses— | Sept., 2 | White, Edgar F.: Article on "Chemistry of wood" | May, 22 |
| portable sawmill, use of | Mar., 18 | Wild life: | |
| timberland management | May, 18 | elk, problems of the Jackson Hole | Sept., 20 |
| Yale— | Nov., 6 | Federal court decree in Kaibab deer case | Sept., 8 |
| camp, summer forestry | May, 9 | game in the Southern Appalachians | Nov., 11 |
| club, research, in plant sciences | May, 9 | <i>in</i> Forest protection conference at Syracuse | Jan., 14 |
| <i>See also</i> College, School. | May, 1 | porcupine control | Nov., 15 |
| Utah, legislative developments | Nov., 15 | sanctuaries, Indiana | Jan., 2; Nov., 5 |
| Utilization— | Nov., 8 | Windbreak planting, Porto Rico | Nov., 2 |
| of local supplies by timber-treating plants | Sept., 2 | <i>See also</i> Shelter belt. | |
| of lodgepole pine, experiment in | Sept., 1 | Wisconsin: | |
| of natural resources of northern New York, association for | May, 16 | changes conservation commission | Sept., 1 |
| of redwood blocks for floors | Sept., 12 | constitutional amendment | July, 2 |
| of waste, lumber mill | Nov., 14 | lumbermen, reforestation conference | Nov., 14 |
| of wood, national committee on, <i>in</i> Preventing Termite | Nov., 4 | taxation legislation | Sept., 1 |
| damage to buildings | July, 2 | University of, short courses | |
| wood— | Jan., 16 | timberland management | Nov., 6 |
| short lengths to be purchased by Army | May, 5 | use of portable sawmill | May, 8 |
| study in Connecticut | Sept., 3 | Wise, Louis E., coauthor Chemistry of wood | May, 22 |
| Vermont: | Sept., 3 | Women's clubs— | |
| association holds contest | Jan., 2 | Florida | May, 8 |
| blister rust control | May, 5 | Minnesota | Nov., 15 |
| farmers get low prices for Christmas trees | Jan., 2 | Mississippi, <i>in</i> Forestry essays for cash prizes | Mar., 7 |
| fire— | Sept., 3 | Ohio | May, 8 |
| damage reduced | Jan., 2 | Wood— | |
| measures, emergency | Sept., 3 | Chemistry of (review) | May, 22 |
| forest park received as gift | Jan., 2 | industries of New England | May, 15 |
| forests— | Sept., 3 | pavement, use of, declining in Paris | July, 18 |
| municipal | Nov., 4 | preservative treatment. <i>See</i> Preservation. | |
| State, land purchased for additions to | May, 5 | pulp for dentists' dams | Sept., 13 |
| town | Mar., 3 | utilization. <i>See</i> Utilization. | |
| legislative developments | May, 3 | Woodlands, farm. <i>See</i> Extension, Farm forestry. | |
| Vinal, William G., nature study program | Mar., 22 | Woods— | |
| Virgin, J. Fredrik, organizes junior foresters | Jan., 4 | American, suitability for paper pulp | July, 21 |
| Virginia: | Sept., 2 | Bibliography of tropical (review) | Mar., 21 |
| experimental plantings | July, 14 | New Zealand, to be tested for paper making | Sept., 18 |
| mill practices selective cutting | Nov., 4 | work required for Boy Scout merit badge in forestry | Mar., 6 |
| organized fire protection | July, 21 | Woodward, K. W., coauthor of The farm woodlot in New | |
| Volume [yield and] tables, southern pine | Nov., 20 | Hampshire, <i>in</i> Recent State forestry publications | Jan., 21 |
| Volumes, tree, form for computing | Mar., 16 | Yellow pine. <i>See</i> Pine. | |
| Wack, Henry Wellington: Ten commandments of the trail | Nov., 10 | Yellow poplar responds to cuttings | July, 10 |
| Wahlenberg, W. G.: Article on "Zinc sulphate for weeding | July, 10 | Yield and volume tables, southern pines | July, 21 |
| seed beds" | July, 10 | Yugoslavia, forests and forest products | Sept., 16 |
| Wakeley, Philip C.: Article on "Chemical weeding of longleaf | July, 10 | Zapata Swamp, Cuba, timber in | Jan., 17 |
| pine seed beds" | | Zinc sulphate for weeding seed beds | Nov., 10 |